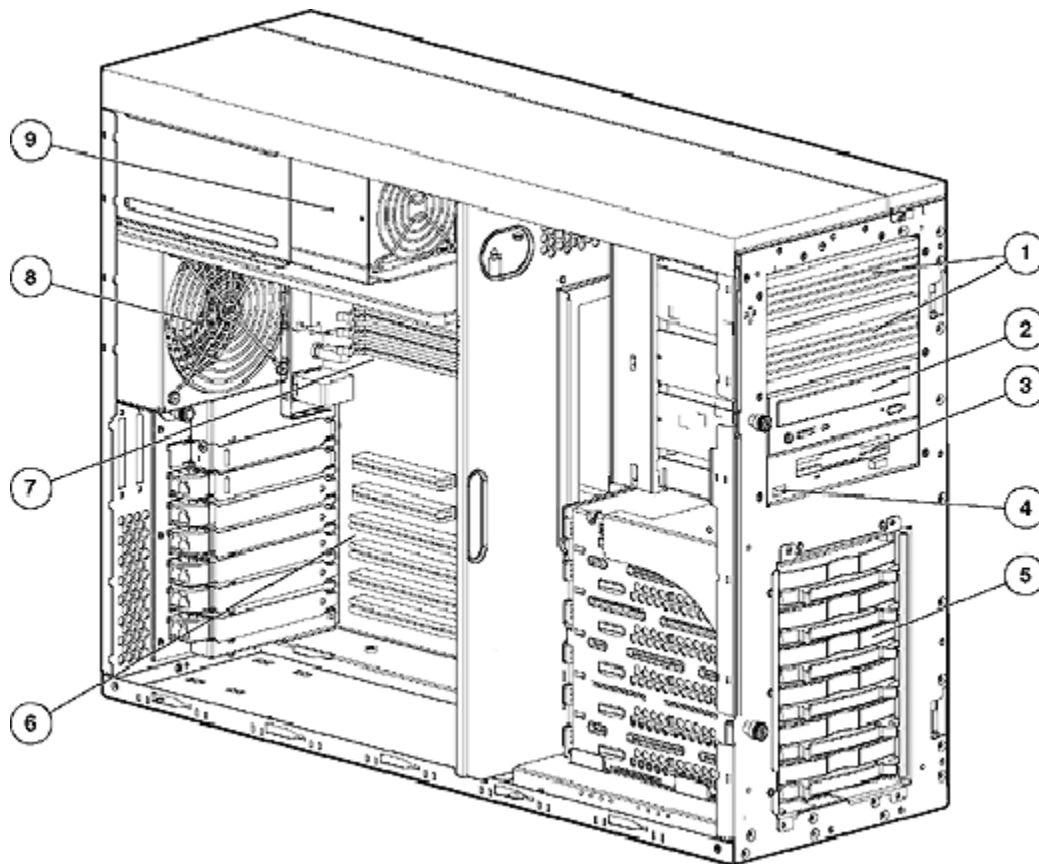


### Overview



1. Two Available Removable Media Bays
2. 48X Max IDE CD-ROM Drive
3. 1.44 Diskette Drive
4. USB Port
5. Six Hot Plug Drive Bays

6. Six Expansion Slots (four PCI-X, two PCI-Express)
7. Six DIMM sockets for up to 12 GB of DDR2 memory
8. System Fan (an optional redundant system fan is available)
9. Power Supply

**NOTE:** An optional 2nd power supply is available for hot-plug 1+1 redundancy

### What's New

The HP ProLiant ML350 G4p now supports several exciting new options:

- New Serial Attached SCSI (SAS) and SATA hard drives
- Support for up to 4.5TB of internal storage with the new 750GB SATA HDD

### Overview

### At A Glance

The HP ProLiant ML350 G4p is a traditional server refined with essential availability features to form a versatile, dependable backbone for expanding businesses and dedicated workgroups.

The HP ProLiant family now includes an HP ProLiant ML350 server that combines fourth generation features with top notch performance and remote management capabilities. To complement our popular G4 features, the HP ProLiant ML350 G4p packs the latest Intel Xeon processors with 2MB cache, DDR2 memory, Integrated Lights-Out management, and support for serial hard drives.

- **Processors:**
  - Intel® Xeon™ processors up to 3.6 GHz (dual processor capability) with 2MB level 2 cache; processors include support for Hyper-Threading
  - Intel® E7520 chipset
  - 800-MHz front side bus
- **Memory:**
  - PC2-3200 400 MHz DDR2 SDRAM with Online Spare support (expandable to 12 GB)
- **Storage Controller:**
  - Integrated Dual Channel Ultra320 SCSI Adapter
  - HP integrated 2 Port SATA controller
  - Smart Array 641 Controller (standard in Array Models only)
- **Internal Drive Support:**
  - Standard support for six hot plug SCSI or two SATA hard drives (SCSI models support Ultra320 drives. Serial models support SAS and SATA drives)  
**NOTE:** See the "Storage" section of this QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives.
  - Internal storage capacity of up to 4.5TB (SATA HDD)
  - Up to 2.4TB with optional 2-bay hot plug SCSI drive cage
  - Support for optional duplex SCSI backplane and second serial port
- **Network Controller:**
  - Embedded NC7761 Gigabit Server Adapter
- **Expansion Slots:**
  - 6 Total: (1) 64-bit/133-MHz PCI-X; (2) 64-bit/100-MHz PCI-X; (1) 64-bit/66-MHz PCI-X; (1) x4 PCI Express; (1) x8 PCI Express
- **USB 2.0 Ports:**
  - 3 Total: (1) front; (1) internal; (1) rear accessible port
- **Redundancy:**
  - 725W Hot-Plug Power Supply
  - Optional 725W Hot-Pluggable Redundant Power Supply (1+1) available
- **Management:**
  - Integrated Lights-Out (iLO) Standard for remote management
  - Support for ROM based setup utility (RBSU) and redundant ROM
  - Systems Insight Manager, SmartStart, and Automatic Server Recovery 2 (ASR-2)
  - HP Power Regulator for ProLiant, delivering server level, policy based power management with industry leading energy efficiency and savings on system power and cooling costs
- **Form Factor:**
  - Tower or rack (5U)
- **Deployment/Serviceability:**
  - Tool-free chassis entry and component access
  - Universal rail solution supporting both square and round hole rack environments
- **Warranty:**
  - Protected by HP Services and a worldwide network of resellers and service providers. Three-year Next Business Day, on-site limited global warranty. Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory, and SCSI/SAS hard drives. SATA hard drives have a one-year warranty.

Standard Features

|   |  |                              |                     |             |                 |          |             |
|---|--|------------------------------|---------------------|-------------|-----------------|----------|-------------|
| Processor<br>One of the following depending on Model  | Intel Xeon Processor 3.4 GHz/800-2MB L2  |                              |                     |             |                 |          |             |
|   | Intel Xeon Processor 3.2 GHz/800-2MB L2  |                              |                     |             |                 |          |             |
|   | Intel Xeon Processor 3.0 GHz/800-2MB L2  |                              |                     |             |                 |          |             |
|   | NOTE: "Factory Integrated Models" are configured to order and require the selection of at least one processor. |                              |                     |             |                 |          |             |
| Cache Memory  | Integrated 2MB Level 2 cache   |                              |                     |             |                 |          |             |
| Processor Upgradeability  | Upgradeable to dual processing   |                              |                     |             |                 |          |             |
| Chipset   | Intel® E7520 Chipset with 800-MHz Front Side Bus   |                              |                     |             |                 |          |             |
| Memory Protection   | Online Spare<br>Advanced ECC   |                              |                     |             |                 |          |             |
| Memory<br>One of the following depending on model   | Type   | PC2-3200 DDR2 SDRAM (400MHz) |                     |             |                 |          |             |
|   | Standard for Non-Array Models  | 512 MB (1 x 512 MB)          |                     |             |                 |          |             |
|   | Standard for Array Models  | 1 GB (2 x 512 MB)            |                     |             |                 |          |             |
|   | Maximum  | 12 GB                        |                     |             |                 |          |             |
| NOTE: The standard memory information above does not apply to factory integrated models. The memory configuration in factory integrated models is set according to your specifications. |  |                              |                     |             |                 |          |             |
| Network Controller  | Embedded NC7761 Gigabit Server Adapter   |                              |                     |             |                 |          |             |
| Expansion Slots   | Slot Number  | Bus Speed                    | Maximum Card Length | Bus Number* | Device Number** | Hot Plug | PCI Voltage |
|   | 1  | PCI Express x4 (half length) | 6.6"                | 16          | 1               | no       | N/A         |
|   | 2  | PCI Express x8               | 12.28"              | 12          | 1               | no       | N/A         |
|   | 3  | 64-bit/100MHz PCI-X          | 12.28"              | 9           | 2               | no       | 3.3 Volt    |
|   | In HP ProLiant ML350 G4p Array Models, the Smart Array 641 is installed in Slot 3.                             |                              |                     |             |                 |          |             |
|   | 4  | 64-bit/100MHz PCI-X          | 12.28"              | 9           | 1               | no       | 3.3 Volt    |
|   | 5  | 64-bit/133MHz PCI-X          | 12.28"              | 6           | 1               | no       | 3.3 Volt    |
|   | 6  | 64-bit/66MHz PCI-X           | 12.28"              | 2           | 2               | no       | 3.3 Volt    |
| *NOTE: Bus number listed reflects the default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.  |  |                              |                     |             |                 |          |             |
| **NOTE: Slots are enumerated differently based on operating system. Microsoft's operating systems enumerate from lowest to highest Device ID by bus (starting with the lowest bus).     |  |                              |                     |             |                 |          |             |
| NOTE: All slots can accept universal keyed PCI cards  |  |                              |                     |             |                 |          |             |

Standard Features

|  |   |  |  |
|--|---|--|--|
| <b>Storage Controller</b><br>One of the following depending on model | Integrated Dual Channel Ultra320 SCSI Adapter   |  |  |
|  | HP integrated 2 Port SATA controller  |  |  |
| Smart Array 641 Controller (Standard in Array Models only)           |   |  |  |
| <hr/>  |   |  |  |
| <b>Storage</b>   | Diskette Drives   | 1.44 MB Diskette Drive   |  |
|  | Optical Drive   | 48x IDE CD-ROM Drive   |  |
|  | Hard Drives   | None included standard   |  |
|  | External Storage  | Two external SCSI port knockouts available; optional Internal-to-External SCSI Cable Option Kit required for external connections  |  |
|  |   | <ul style="list-style-type: none"><li>• HD68 Internal to External SCSI Cable Option Kit (PN 159547-B22)</li><li>• VHDCI Internal to External SCSI Cable Option Kit (PN 333370-B21)</li></ul>   |  |
| <hr/>  |   |  |  |
| <b>Maximum Internal Storage</b>                                      | Hot Plug SCSI   | 2.40TB   | 6 x 300GB with standard drive cage +<br>2 x 300GB with optional ML3xx Two Bay Hot Plug SCSI Drive Cage |
|  | Hot Plug SATA   | 4.50TB   | 2 x 7GB with standard controller +<br>4 x 750GB with optional SATA array controller                    |
|  | Hot Plug SAS (3.5")   | 876GB  | 6 x 146GB with optional Smart Array P600 Controller  |
| <hr/>  |   |  |  |
| <b>Interfaces</b>  | Parallel  | 1  |  |
|  | Serial  | 1 (optional 2nd serial port available)   |  |
|  | Pointing Device (Mouse)   | 1  |  |
|  | Graphics  | 1  |  |
|  | Keyboard  | 1  |  |
|  | Network RJ-45   | 2 (1 dedicated for iLO)  |  |
|  | USB 2.0 Ports   | 3 total: 1 front, 1 internal, 1 rear   |  |
|  |   | <b>NOTE:</b> Please see the following URL for additional information regarding USB support:<br><a href="http://h18004.www1.hp.com/products/servers/platforms/usb-support.html">http://h18004.www1.hp.com/products/servers/platforms/usb-support.html</a> . |  |
|  | External SCSI knockouts   | 2  |  |
| <hr/>  |   |  |  |
| <b>Graphics</b>  | Integrated ATI RAGE XL Video Controller with 8-MB SDRAM Video Memory<br>VGA connector; up to 1600 x 1200 resolution supported   |  |  |
| <hr/>  |   |  |  |
| <b>Form Factor</b>   | Tower or rack (5U)  |  |  |
|  | <b>NOTE:</b> Rack models (and rack conversion kit) support: <ul style="list-style-type: none"><li>• Square or round hole racks 24"- 35" deep, including HP Rack System /E and HP Systems</li><li>• Telco racks with 3rd part option kit from Rack Solutions<br/><a href="http://www.racksolutions.com/hp">http://www.racksolutions.com/hp</a></li></ul> |  |  |

Standard Features

|  |   |   |
|--|---|---|
| ProLiant Essentials Foundation Pack Software | HP Systems Insight Manager                            | <p>HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible environment to centrally manage servers, storage and other infrastructure devices across multiple operating system platforms.</p> <p>Through a single management view, HP SIM provides core management services that include device discovery and identification, event views, health monitoring, inventory data collection, software version control and reporting. HP SIM is built on industry standards and is extensible with value-added ProLiant Essentials, Integrity Essentials and Storage Essentials software to meet individual management needs. For more details on HP SIM visit <a href="http://www.hp.com/go/hpsim">http://www.hp.com/go/hpsim</a>.</p> <p>HP SIM provides organizations with the following benefits:</p> <ul style="list-style-type: none"><li>• Simplifies and consolidates infrastructure lifecycle management using task and query based functionality</li><li>• Provides the foundation for infrastructure automation and virtualization</li><li>• Enables IT management based on business processes not hardware platforms</li><li>• Lowers infrastructure maintenance cost and frees resources for innovation</li><li>• Maximizes resource utilization with virtualization technologies</li><li>• Provides a central point of integration between infrastructure and Enterprise management tools such as HP OpenView</li></ul> |
|  | SmartStart  | <p>SmartStart simplifies server setup by providing a quick, easy way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at <a href="http://www.hp.com/servers/manage">http://www.hp.com/servers/manage</a>.</p> <p>Minimum SmartStart version supported: 7.2<br/>Latest SmartStart version supported: 7.3</p>  |
|  | Insight Management Agents                             | <p>Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers.</p> <p>Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack. For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at <a href="http://www.hp.com/servers/manage">http://www.hp.com/servers/manage</a>.</p>   |
|  | Subscriber's Choice                                   | <p>Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides automatic delivery of software and driver change notifications for ProLiant products. Sign up at <a href="http://www.hp.com/go/subscriberschoice">http://www.hp.com/go/subscriberschoice</a> and customize your profile to receive alerts on updates as they become available.</p>   |
|  | ROMPaq, support software, and configuration utilities | <p>The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options<br/>Available in SmartStart or downloadable from the Software and Drivers download pages at <a href="http://www.hp.com/go/support">http://www.hp.com/go/support</a>.</p>  |



Standard Features

|  |  |
|--|--|
| Insight Diagnostics Online Edition       | The most advanced configuration analysis, reporting and troubleshooting utilities used by HP at your fingertips. Available in SmartStart.  |
| Optional ProLiant Essentials Value Packs | Optional software offerings that extend the functionality of an Adaptive Infrastructure to address specific business problems and needs: <ul style="list-style-type: none"><li>• Rapid Deployment Pack (RDP) is an automated deployment and provisioning solution for all ProLiant servers. RDP includes the ProLiant Integration Module featuring ProLiant server pre-configured events for OS installation, and optimized software drivers, firmware and management agents. Every RDP disc includes 10-node trial licenses for evaluation purposes. RDP requires a license for each server deployed and is available for purchase with HP servers. For more information, visit: <a href="http://www.hp.com/servers/rdp">http://www.hp.com/servers/rdp</a>.</li><li>• Performance Management Pack - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources.</li><li>• Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus</li><li>• Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats</li><li>• Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.</li><li>• Server Migration Pack - The Server Migration Pack automates the manual processes required for migrating servers between physical or virtual platforms (P2V, V2P, and V2V).</li><li>• Integrated Lights-Out Advanced Pack - upgrades the Integrated Lights-Out processor to full virtual presence and control with graphical console and virtual media.</li></ul> |
| Optional Remote Management Packs         |  |

**NOTE:** Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

**NOTE:** For more information regarding ProLiant Essentials Software, please see the following URL: <http://www.hp.com/servers/proliantessentials>.

|                              |  |
|------------------------------|--|
| Industry Standard Compliance | ACPI V2.0 Compliant<br>PCI 2.2 Compliant<br>PXE Support<br>WOL Support<br>PCI-X 1.0 Compliant<br>Novell Certified<br>Microsoft® Logo certifications<br>USB 2.0 |
|------------------------------|--|





Standard Features

|                               |   |
|-------------------------------|---|
| Availability                  | Optional Hot Plug, Redundant Power supply<br>Online Spare Memory<br>Optional Redundant System Fan   |
| Remote Management             | Integrated Lights-Out Standard <ul style="list-style-type: none"><li>Virtual Text Remote Console</li><li>Virtual Power Button Control</li><li>Dedicated &amp; shared LAN Connectivity</li><li>Browser and command line access</li><li>Automatic IP Configuration via DHCP/DNS/WINS</li><li>Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell Security IML and iLO Event Logging</li><li>Support for 12 user accounts with customizable access privilege</li></ul> Integrated Lights Out Advanced Pack (optional)<br>Remote Insight Lights-Out Edition II (optional) |
| System Management             | HP Systems Insight Manager<br>SmartStart<br>Redundant ROM<br>System Firmware Update<br>ROMPaq<br>ProLiant RBSU (ROM-Based Setup Utility)<br>Automatic Server Recovery-2 (ASR-2)<br>Dynamic Sector Repairing (with Smart Array Controller)<br>Drive Parameter Tracking (with Smart Array Controller)<br>Pre-Failure Warranty (covers processors, memory and SCSI/SAS hard drives)  |
| Security                      | Power-on password<br>Setup password<br>Diskette boot control<br>Parallel and serial interface control<br>Disk configuration lock<br>Power switch security   |
| Server Power Cords            | Tower models ship standard with a 12' country specific, lowline NEMA power cord.<br>Rack models ship standard with a 10' IEC cable. Rack models for some countries also include a 12' NEMA cord.<br>Most redundant power supply options ship with a 12' country specific power cord. The one exception is the IEC redundant power supply (P/N 384168-B21) which ships with a 10' IEC cable only.<br>Localized cables included with geographic specific models in other world regions.   |
| UPS and PDU Power Cord Matrix | Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units:<br><a href="ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf">ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf</a> .   |
| Power Supply                  | Hot plug models: 725 Watt, Power Factor Correction (PFC), Hot Plug 100 to 240 VAC Rated Input Voltage (Auto-sensing), CE Mark Compliant<br>Optional 2nd power supply for hot-pluggable 1 + 1 redundancy   |



### Standard Features

|  |  |
|--|--|
| <b>System Fans</b>                                       | 1 fan ships standard, 2 fans total supported (does not include power supply or processor heatsink fans)  |
| <b>Required Cabling</b>                                  | <p>For required cabling information, refer to the HP ProLiant ML350 G4p cabling matrix at <a href="http://www.hp.com/servers/proliantML350">http://www.hp.com/servers/proliantML350</a>.</p> <p><b>NOTE:</b> Please see the "Storage" section of this QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives.</p>  |
| <b>OS Support</b>  | <p>Microsoft Windows Server 2003<br/> Microsoft Small Business Server 2003<br/> Microsoft Windows 2000 Server and Advanced Server<br/> Novell NetWare<br/> Novell NetWare Small Business Suite<br/> LINUX (Red Hat, SuSE)<br/> VMware Virtualization Software</p> <p><b>NOTE:</b> For a complete and up-to-date listing of supported operating systems please visit our OS Support Matrix at: <a href="http://www.hp.com/go/supportos">http://www.hp.com/go/supportos</a></p> <p><b>NOTE:</b> For a complete and up-to-date information on Linux support, please visit the HP Linux Web site at <a href="http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html">http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html</a></p> <p><b>NOTE:</b> Optional hardware may be required to support some operating systems.</p> <p><b>NOTE:</b> For information on how to buy server operating systems from HP please visit the OS product site at: <a href="http://h18004.www1.hp.com/products/servers/software/OEM.html">http://h18004.www1.hp.com/products/servers/software/OEM.html</a></p> <p><b>NOTE:</b> For an up-to-date listing of the latest drivers available for the HP ProLiant ML350, please see: <a href="http://www.compaq.com/support/files/server/us/index.html">http://www.compaq.com/support/files/server/us/index.html</a></p> <p><b>NOTE:</b> For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at: <a href="http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html">http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html</a></p> |
| <b>Installation of Server into Telco Racks</b>           | Support for all 2-post Telco racks requires the use of the HP ProLiant ML350 G4 rack kit and an additional option kit from Rack Solutions. <a href="http://www.racksolutions.com/hp">http://www.racksolutions.com/hp</a> .   |
| <b>Factory Express Portfolio for Servers and Storage</b> | <p>HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.</p> <p>Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.</p> <p>For more information on Factory Express services for your specific server model please contact your sales representative or go to <a href="http://www.hp.com/go/factory-express">http://www.hp.com/go/factory-express</a>.</p>   |
| <b>HP Enterprise Configurator</b>                        | The HP eCo-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.   |



### Standard Features

#### HP ProLiant Smart Buys (NA only)

The HP Smart Buy program offers mainstream business solutions at competitive prices with excellent availability and superior HP quality. It offers a wide range of industry-leading HP products at compelling prices, allowing you to receive richer configurations with additional options.

**NOTE:** ProLiant Smart Buys are available in NA only. For detailed specification information on ProLiant Smart Buys please click on the following link:

<ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>

#### Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of resellers and service providers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

**NOTE:** Server Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at:

<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

HP Care Pack services include coverage for the HP branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as 22" and smaller external monitors and tower UPS options up to 3kVA; these items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included, standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

HP services provide continuous care and support expertise with committed response designed to meet your IT and business needs.

To fully capitalizing on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a ProLiant server support offer to help you speedily deploy and maximize system uptime.

Enhanced Care - Minimum recommended service support offer designed to ensure customers have access to expert assistance, whenever they need it.

- *4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years*

Continuance Care - Recommended service delivering cost-effective support options designed to extend HP Services committed response and guaranteed fix times, designed to speed problem identification and resolution.

- *6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years*

Total Care - Highest HP Support service level recommend to help increase IT performance and availability with comprehensive, integrated hardware and software services

- *Support Plus 24 - Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays*

Deployment Services - HP Installation and Start Up services designed to take time, risk, and worry out of the deployment of ProLiant servers - and free customers IT support staff to focus on what they do best, their business.

- *Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl.*

## Standard Features

*HP holidays*

**NOTE:** For a complete listing of service offerings and information visit:

<http://www.hp.com/services/proliantservices>

<http://www.hp.com/go/proliant/carepack>

Models

**NOTE:** ProLiant Smart Buys are available in NA only. For detailed specification information on ProLiant Smart Buys please click on the following link: <ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>.

Models - Tower

|  |                           |   |
|--|---------------------------|---|
| <b>ML350T04p SCSI x3.0-2MB/800, 512 MB</b><br>380165-xx1     | <b>Processor(s)</b>       | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)  |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional hard drives & drive cage)  |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
|  | <b>Form Factor</b>        | Tower (5U)  |
| <b>ML350T04p SCSI x3.0-2MB/800, 1 GB Array</b><br>380173-xx1 | <b>Processor(s)</b>       | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 1 GB (2 x 512MB)  |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>RAID Controller</b>    | Smart Array 641 Controller  |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)  |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives)  |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
| <b>ML350T04p SATA/SAS x3.0-2MB/800, 512 MB</b><br>331889-xx1 | <b>Processor(s)</b>       | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated two port SATA<br>Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>Hard Drive</b>         | None ship standard (Up to 6 supported with optional SATA or SAS controller)<br><b>NOTE:</b> Please see the "Storage" section of the QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives. |
|  | <b>Internal Storage</b>   | Hot Plug SATA - 4.5TB maximum (with optional SATA controller & 6 hard drives)<br><b>NOTE:</b> The optional SATA RAID controller is required to support hot plug of SATA hard drives.<br>Hot Plug SAS - 876GB maximum (with optional SAS controller & 6 hard drives)   |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |

Models

|  | Form Factor               | Tower (5U)  |
|--|---------------------------|---|
| <b>ML350T04p SCSI</b><br><b>x3.2-2MB/800, 512 MB</b><br>380166-xx1               | <b>Processor(s)</b>       | (1) Intel Xeon 3.2 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)  |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives)  |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
|  | <b>Form Factor</b>        | Tower (5U)  |
| <b>ML350T04p SCSI</b><br><b>x3.2-2MB/800, 1 GB</b><br><b>Array</b><br>380196-xx1 | <b>Processor(s)</b>       | (1) Intel Xeon 3.2 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 1 GB (2 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>RAID Controller</b>    | Smart Array 641 Controller  |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)  |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives)  |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
|  | <b>Form Factor</b>        | Tower (5U)  |
| <b>ML350T04p SATA/SAS</b><br><b>x3.2-2MB/800, 512 MB</b><br>356816-xx1           | <b>Processor(s)</b>       | (1) Intel Xeon 3.2 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated two port SATA<br>Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported with optional SATA or SAS controller)<br><b>NOTE:</b> Please see the "Storage" section of the QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives. |
|  | <b>Internal Storage</b>   | Hot Plug SATA - 4.5TB maximum (with optional SATA controller & 6 hard drives)<br><b>NOTE:</b> The optional SATA RAID controller is required to support hot plug of SATA hard drives.<br>Hot Plug SAS - 876GB maximum (with optional SAS controller & 6 hard drives)   |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
|  | <b>Form Factor</b>        | Tower (5U)  |

Models

|  |                           |   |
|--|---------------------------|---|
| <b>ML350T04p SCSI</b><br><b>x3.4-2MB/800, 512 MB</b><br>380172-xx1               | <b>Processor(s)</b>       | (1) Intel Xeon 3.4 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)  |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives)  |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
|  | <b>Form Factor</b>        | Tower (5U)  |
| <b>ML350T04p SCSI</b><br><b>x3.4-2MB/800, 1 GB</b><br><b>Array</b><br>380197-xx1 | <b>Processor(s)</b>       | (1) Intel Xeon 3.4 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 1 GB (2 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>RAID Controller</b>    | Smart Array 641 Controller  |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)  |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives)  |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
| <b>ML350T04p SATA/SAS</b><br><b>x3.4-2MB/800, 512 MB</b><br>370508-xx1           | <b>Processor(s)</b>       | (1) Intel Xeon 3.4 GHz processor standard (up to 2 supported)   |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache  |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)   |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter  |
|  | <b>Storage Controller</b> | Integrated two port SATA<br>Integrated dual channel Ultra320 SCSI adapter   |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported with optional SATA or SAS controller)<br><b>NOTE:</b> Please see the "Storage" section of these QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives. |
|  | <b>Internal Storage</b>   | Hot Plug SATA - 4.5TB maximum (with optional SATA controller & 6 hard drives)<br><b>NOTE:</b> The optional SATA RAID controller is required to support hot plug of SATA hard drives.<br>Hot Plug SAS - 876GB maximum (with optional SAS controller & 6 hard drives)   |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive  |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive  |
|  | <b>Form Factor</b>        | Tower (5U)  |

Models

Models - Rack

|  |                           |  |
|--|---------------------------|--|
| <b>ML350R04p SCSI x3.0-2MB/800, 512 MB</b><br>382174-xx1     | <b>Processor(s)</b>       | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported)        |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache   |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)  |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter                               |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter                        |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)                               |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives) |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive   |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive   |
|  | <b>Form Factor</b>        | Rack (5U)  |
| <hr/>  |                           |  |
| <b>ML350R04p SCSI x3.0-2MB/800, 1 GB Array</b><br>382195-xx1 | <b>Processor(s)</b>       | (1) Intel Xeon Processor 3.0 GHz standard (up to 2 supported)        |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache   |
|  | <b>Standard Memory</b>    | 1 GB (2 x 512 MB)  |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter                               |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter                        |
|  | <b>RAID Controller</b>    | Smart Array 641  |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)                               |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives) |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive   |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive   |
|  | <b>Form Factor</b>        | Rack (5U)  |
| <hr/>  |                           |  |
| <b>ML350R04p SCSI x3.2-2MB/800, 512 MB</b><br>382177-xx1     | <b>Processor(s)</b>       | (1) Intel Xeon Processor 3.2 GHz standard (up to 2 supported)        |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache   |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)  |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter                               |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter                        |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)                               |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives) |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive   |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive   |
|  | <b>Form Factor</b>        | Rack (5U)  |



Models

|  |                           |  |
|--|---------------------------|--|
| <b>ML350R04p SCSI x3.2-2MB/800, 1 GB Array</b><br>382196-xx1 | <b>Processor(s)</b>       | (1) Intel Xeon Processor 3.2 GHz standard (up to 2 supported)        |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache   |
|  | <b>Standard Memory</b>    | 1 GB (2 x 512 MB)  |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter                               |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter                        |
|  | <b>RAID Controller</b>    | Smart Array 641 Controller   |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)                               |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives) |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive   |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive   |
|  | <b>Form Factor</b>        | Rack (5U)  |
| <b>ML350R04p SCSI x3.4-2MB/800, 512 MB</b><br>382197-xx1     | <b>Processor(s)</b>       | (1) Intel Xeon Processor 3.4 GHz standard (up to 2 supported)        |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache   |
|  | <b>Standard Memory</b>    | 512 MB (1 x 512 MB)  |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter                               |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter                        |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)                               |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives) |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive   |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive   |
|  | <b>Form Factor</b>        | Rack (5U)  |
| <b>ML350R04p SCSI x3.4-2MB/800, 1 GB Array</b><br>382178-xx1 | <b>Processor(s)</b>       | (1) Intel Xeon Processor 3.4 GHz standard (up to 2 supported)        |
|  | <b>Cache Memory</b>       | Integrated 2MB Level 2 cache   |
|  | <b>Standard Memory</b>    | 1 GB (2 x 512 MB)  |
|  | <b>Network Controller</b> | Embedded NC7761 Gigabit Server Adapter                               |
|  | <b>Storage Controller</b> | Integrated dual channel Ultra320 SCSI adapter                        |
|  | <b>RAID Controller</b>    | Smart Array 641 Controller   |
|  | <b>Hard Drive</b>         | None ship standard (up to 6 supported)                               |
|  | <b>Internal Storage</b>   | 2.4TB maximum hot plug SCSI (with optional drive cage & hard drives) |
|  | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive   |
|  | <b>Diskette Drive</b>     | 1.44 MB Diskette Drive   |
|  | <b>Form Factor</b>        | Rack (5U)  |

Models

Country Code Key

XX=00  
XX=01  
XX=03  
XX=04  
XX=05  
XX=20  
XX=29  
XX=37  
XX=42  
XX=AA

Tower Code Key

U.S. English  
Australia  
UK  
Germany  
France  
Brazil  
Japan  
APD  
Europe  
PRC

Rack Code Key

U.S. English  
N/A  
N/A  
N/A  
N/A  
N/A  
Japan  
APD  
Europe  
PRC

Configuration Information - Factory Integrated Models (North America only)

**NOTE:** For Configure to Order requirements within EMEA region, please consult local Sales Contact.  
**NOTE:** All configure-to-order servers must start with a CTO Chassis. Use the following section to order a server customized to your requirements with options integrated at the factory. The options you select in steps 2 and 3 will be integrated with the base configuration you select in step 1. Additional options selected in Step 4 will also be integrated when applicable.  
**NOTE:** Standard models of this product offering (see previous section of this document) do not support HP Factory Express Server Configuration Level 1.  
**NOTE:** FIO indicates that this option only available as a Factory Installable Option.

Step 1: Base Configuration (choose one of the following configurable models)

|        |   |            |
|--------|---|------------|
| Models | HP ProLiant ML350G4p HP-SCSI Rack CTO Chassis (North America)   | 382188-405 |
|        | <b>Includes:</b><br>Embedded NC7761 Gigabit Server Adapter<br>Integrated dual channel Ultra320 SCSI adapter<br>Six Hot Plug SCSI Drive Bays<br>Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI Express, and one x8 PCI Express<br>Two USB ports<br>725W Hot-Plug Power Supply<br>5U Rack Form Factor   |            |
|        | HP ProLiant ML350G4p HP-SCSI Tower CTO Chassis (North America)  | 382187-405 |
|        | <b>Includes:</b><br>Embedded NC7761 Gigabit Server Adapter<br>Integrated dual channel Ultra320 SCSI adapter<br>Six Hot Plug SCSI Drive Bays<br>Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI Express, and one x8 PCI Express<br>Two USB ports<br>725W Hot-Plug Power Supply<br>5U Tower form factor<br>Keyboard<br>2-button Mouse                              |            |
|        | HP ProLiant ML350G4p Serial Tower CTO Chassis (North America)   | 372798-405 |
|        | <b>Includes:</b><br>Embedded NC7761 Gigabit Server Adapter<br>Integrated dual channel Ultra320 SCSI adapter<br>Dual port SATA controller<br>Six Hot Plug SATA Drive Bays<br>Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI-Express, and one x8 PCI-Express<br>Two USB ports<br>725W Hot-Plug Power Supply<br>5U Tower form factor<br>Keyboard<br>2-button Mouse |            |

Configuration Information - Factory Integrated Models (North America only)

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

|               |   |            |
|---------------|---|------------|
| Processors    | Intel X3.0GHz/800-2MB ML350G4p FIO BASE                             | 382184-L21 |
|               | Intel X3.2GHz/800-2MB ML350G4p FIO BASE                             | 382182-L21 |
|               | Intel X3.4GHz/800-2MB ML350G4p FIO BASE                             | 382180-L21 |
|               | Intel X3.6GHz/800-2MB ML350G4p FIO BASE                             | 370515-L21 |
| Base Memory   | 512 MB Advanced ECC PC2-3200 DDR SDRAM DIMM Kit (1 x 512 MB)        | 384163-B21 |
|               | 1 GB Advanced ECC PC2-3200 DDR SDRAM DIMM Kit (2 x 512 MB)          | 343055-B21 |
|               | 2 GB Advanced ECC PC2-3200 DDR SDRAM DIMM Kit (2 x 1024 MB)         | 343056-B21 |
|               | 4 GB Single-Rank Adv. ECC PC2-3200 DDR SDRAM DIMM Kit (2 x 2048 MB) | 343057-B21 |
| Optical Drive | DVD-ROM Drive Option Kit  | 217053-B21 |
|               | CD-RW/DVD-ROM Combo Drive Option Kit                                | 331346-B21 |
|               | HP DVD±R/RW 16X Half Height   | 383974-B21 |
|               | HP 48X CD-ROM ALL (no screws)                                       | 384758-B21 |

Step 3: Choose Additional Factory Integratable Options

|                 |   |            |
|-----------------|---|------------|
| SAS Starter Kit | <b>NOTE:</b> The new HP ProLiant ML350 G4p SAS Starter Kit makes migration to SAS easy and affordable. The SAS Starter Kit includes the Smart Array P600 Controller, two 72GB 15K rpm SAS hard drives, and two required SAS cables. |            |
|                 | HP ProLiant ML350 G4p SAS Starter Kit   | 393684-B21 |
| Controllers     | Smart Array 641 Controller  | 291966-B21 |
|                 | Smart Array 642 Controller  | 291967-B21 |
|                 | Smart Array 6402/128 Controller   | 273915-B21 |
|                 | Smart Array 6404/256 Controller   | 273914-B21 |
|                 | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2  | 374654-B21 |
|                 | HP Smart Array P600 Controller  | 337972-B21 |
| Hard Drives     | <b>Ultra320 Hot Plug (For use with HP-SCSI CTO Chassis)</b>   |            |
|                 | HP 300GB U320 10K Universal HDD   | 350964-B22 |
|                 | HP 146GB U320 10K Universal HDD   | 286716-B22 |
|                 | HP 72GB U320 10K Universal HDD  | 286714-B22 |
|                 | HP 300GB U320 15K Universal HDD   | 411089-B22 |
|                 | HP 146GB U320 15K Universal HDD   | 347708-B22 |
|                 | HP 72GB U320 15K Universal HDD  | 286778-B22 |
|                 | HP 36GB U320 15K Universal HDD  | 286776-B22 |
|                 | <b>SATA Hot Plug (For use with Serial CTO Chassis)</b>  |            |
|                 | HP 750GB 1.5G SATA 7.2K 3.5" HDD  | 432341-B21 |
|                 | HP 500GB 1.5G SATA 7.2K 3.5" HDD  | 395473-B21 |
|                 | HP 250GB 1.5G SATA 7.2K 3.5" HDD  | 349239-B21 |
|                 | HP 160GB 1.5G SATA 7.2K 3.5" HDD  | 349238-B21 |
|                 | HP 80GB 1.5G SATA 7.2K 3.5" HDD   | 349237-B21 |
|                 | <b>SAS 3.5" Hot Plug (For use with Serial CTO Chassis)</b>  |            |
|                 | HP 146GB 3G SAS 15K 3.5" SP HDD   | 375872-B21 |
|                 | HP 72GB 3G SAS 15K 3.5" SP HDD  | 375870-B21 |
|                 | HP 36GB 3G SAS 15K 3.5" SP HDD  | 375868-B21 |

Configuration Information - Factory Integrated Models (North America only)

|                  |  |            |
|------------------|--|------------|
| Hard Drive Cable | HP Internal SAS/SATA Cable, 30 inch multi-lane<br><b>NOTE:</b> The SAS cable above supports four drives. Two cables are required when more than four drives are installed. These cables and HP Smart Array P600 RAID controller are required to support Serial Attached SCSI (SAS) hard drives. Refer to the ML350 G4p Cable Matrix for detailed information ( <a href="http://www.hp.com/servers/proliantML350">http://www.hp.com/servers/proliantML350</a> ).<br><b>NOTE:</b> This part number must be used for factory integration. For field integration (or as an additional "ship along" option) choose EK694AA. | 389662-B21 |
| Modems           | Agere 2006 PCI Hi-Speed 56K Sof FIO<br><b>NOTE:</b> This part number must be used for factory integration. For field integration (or as an additional "ship along" option) choose EK694AA.   | 440519-B21 |

Step 4: Choose Additional Options for Factory Integration

**NOTE:** For additional options, please refer to the "Options" section below. Some options may not be available for factory integration. Please contact an HP sales representative for additional information.

Options

**NOTE:** Some options may not be factory integratable. Please contact your local sales representative for additional information.

|   |  |            |
|---|--|------------|
| <b>HP ProLiant ML350 G4p Unique Options</b> | Hot Plug Redundant Power Supply Option Kit (NA, LA)  | 384168-001 |
|   | Hot Plug Redundant Power Supply Option Kit (AUST)  | 384168-011 |
|   | Hot Plug Redundant Power Supply Option Kit (EURO)  | 384168-021 |
|   | Hot Plug Redundant Power Supply Option Kit (UK)  | 384168-031 |
|   | Hot Plug Redundant Power Supply Option Kit (Japan)   | 384168-291 |
|   | Hot Plug Redundant Power Supply Option Kit (IEC)   | 384168-B21 |
|   | <b>NOTE:</b> PN 384168-B21 contains the redundant power supply with an IEC power cable. Purchase this kit only when connecting to a PDU or UPS that supports IEC cables. All other kits contain country specific power cables. |            |
|   | ProLiant ML350 G4 Tower to Rack Conversion Kit   | 358350-B21 |
|   | ML350 G4 Redundant System Fan Kit  | 365866-B21 |

**ProLiant Essentials Value Pack Software**

|  |  |            |
|--|--|------------|
| <b>ProLiant Essentials Intelligent Networking Pack</b> |  |            |
|  | ProLiant Essentials Intelligent Networking Pack - Windows Edition, Single Server License   | 436225-B21 |
|  | <b>NOTE:</b> For use with a single server. Contains one license with a unique license activation key and documentation.  |            |
|  | <b>NOTE:</b> For additional ProLiant Intelligent Networking Pack - Windows License Kits please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML</a> |            |
|  | ProLiant Essentials Intelligent Networking Pack - Linux Edition, Single Server License   | 436229-B21 |
|  | <b>NOTE:</b> For additional ProLiant Intelligent Networking Pack - Linux License Kits please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML</a>   |            |
|  | <b>ProLiant Essentials Performance Management Pack</b>   |            |
|  | ProLiant Essentials Performance Management Pack, Single-Server License   | 306696-B21 |
|  | <b>NOTE:</b> For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation.  |            |
|  | <b>NOTE:</b> The most recent version of the software can always be downloaded at<br><a href="http://www.hp.com/products/pmp">http://www.hp.com/products/pmp</a> .  |            |
|  | <b>NOTE:</b> For additional ProLiant Performance Management Pack License Kits please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11925_div/11925_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11925_div/11925_div.HTML</a>           |            |
|  | <b>ProLiant Essentials Rapid Deployment Pack Windows Edition Release</b>   |            |
|  | Rapid Deployment Pack, Single-Server License   | 267196-B21 |
|  | <b>NOTE:</b> This license allows 1 server to be deployed and managed via RDP.  |            |
|  | Rapid Deployment Pack, Single-Server License (Japan)   | 267196-291 |
|  | <b>NOTE:</b> This license allows 1 server to be deployed and managed via RDP.  |            |
|  | <b>NOTE:</b> For additional ProLiant Essentials Rapid Deployment Pack License Kits please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.HTML</a>      |            |
|  | <b>ProLiant Essentials Workload Management Pack</b>  |            |
|  | ProLiant Essentials Workload Management Pack, Single Server License  | 303284-B21 |
|  | <b>NOTE:</b> For additional ProLiant Workload Management Pack License Kits please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11452_div/11452_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11452_div/11452_div.HTML</a>              |            |
|  | <b>ProLiant Essentials Virtualization Management Software</b>  |            |





Options

|   |            |
|---|------------|
| ProLiant Essentials Virtual Machine Management Pack, Single-Server License  | 435661-B21 |
| <b>NOTE:</b> For use with a single server. Contains one license with a unique license activation key and documentation.   |            |
| ProLiant Essentials Server Migration Pack, Single-Migration License   | 435663-B21 |
| <b>NOTE:</b> Contains one license, enabling 1 server migration, with a unique license activation key and documentation.   |            |
| <b>NOTE:</b> This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.             |            |
| <b>NOTE:</b> For additional ProLiant Essentials Virtualization Management Software License Kits please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.HTML</a>                      |            |
| <b>ProLiant Essentials Vulnerability and Patch Management Pack</b>  |            |
| ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License  | 371645-B21 |
| <b>NOTE:</b> For use with a single server. Contains one license with a unique license activation key and documentation.   |            |
| <b>NOTE:</b> For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12111_div/12111_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12111_div/12111_div.HTML</a>                           |            |
| <b>NOTE:</b> Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <a href="http://www.hp.com/servers/proliantessentials">http://www.hp.com/servers/proliantessentials</a> or the various ProLiant Essentials Value Pack product QuickSpecs for more information. |            |
| <b>NOTE:</b> For more information regarding ProLiant Essentials Software, please see the following URL: <a href="http://www.hp.com/servers/proliantessentials">http://www.hp.com/servers/proliantessentials</a> .   |            |

|                   |  |            |
|-------------------|--|------------|
| Remote Management | Integrated Lights-Out Advanced Pack  |            |
|                   | Integrated Lights-Out Advanced Pack, 1 server  | 263825-B21 |
|                   | Featuring: Sophisticated virtual administration features for ultimate control of servers in the data centers and remote sites.   |            |
|                   | <b>NOTE:</b> For additional Integrated Light-Out Advanced Pack License Kits please see the QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11052_div/11052_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11052_div/11052_div.HTML</a> |            |

|  |  |            |
|--|--|------------|
| ProLiant Software Maintenance Subscription | ProLiant Software Maintenance Subscription   | 355060-B21 |
|  | ProLiant Software Maintenance Single Release   | 356573-B21 |
|  | ProLiant Foundation Pack Single Release  | 356604-B21 |
|  | <b>NOTE:</b> Please see the SmartStart QuickSpecs for additional information regarding the subscription purchase:<br><a href="http://h18000.www1.hp.com/products/quickspecs/Division/11073.html">http://h18000.www1.hp.com/products/quickspecs/Division/11073.html</a> (Worldwide) |            |

|            |   |            |
|------------|---|------------|
| Processors | Intel Xeon 3.6 GHz-2MB Processor Option Kit | 370515-B21 |
|            | Intel Xeon 3.4 GHz-2MB Processor Option Kit | 382180-B21 |
|            | Intel Xeon 3.2 GHz-2MB Processor Option Kit | 382182-B21 |
|            | Intel Xeon 3.0 GHz-2MB Processor Option Kit | 382184-B21 |



### Options

|                                  |  |            |
|----------------------------------|--|------------|
| <b>Memory (DIMMs)</b>            | <b>NOTE:</b> The HP ProLiant ML350 G4p requires interleaved memory configurations when more than one DIMM is installed. Non-array models of the ML350 G4p ship standard with a single DIMM. Note that when upgrading system memory, DIMMs must be configured in identical pairs.   |            |
|                                  | 512 MB Advanced ECC PC2-3200 DDR2 SDRAM DIMM Kit (1 x 512 MB)  | 384163-B21 |
|                                  | 1 GB Advanced ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 512 MB)  | 343055-B21 |
|                                  | 2 GB Advanced ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 1024 MB)   | 343056-B21 |
|                                  | 4 GB Single-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB)   | 343057-B21 |
|                                  | 4 GB Dual-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB)   | 375004-B21 |
| <b>Internal Storage Upgrades</b> | Duplex Ultra320 SCSI Backplane Option Kit  | 339323-B21 |
|                                  | ML3xx Two Bay Hot Plug SCSI Drive Cage   | 244059-B21 |
|                                  | <b>NOTE:</b> The drive cage option kit (PN 244059-B21) has one 1" drive bay and one 1.6" drive bay. It installs in two removable media bays.   |            |
| <b>Optical Drives</b>            | CD-RW/DVD-ROM Combo Drive Option Kit   | 331346-B21 |
|                                  | <b>NOTE:</b> The DVD-ROM drive is supported in either the CD-ROM bay or a removable media bay. If placed in a removable media bay, it requires the 2-Device IDE cable (PN 305381-B21).   |            |
|                                  | DVD-ROM Drive Option Kit   | 217053-B21 |
|                                  | HP DVD±R/RW 16X Half Height  | 383974-B21 |
| <b>Serial Port Kit</b>           | ProLiant Second Serial Port Option Kit   | 390390-B21 |
| <b>Hard Drives</b>               | <b>Ultra320 – Universal Hot Plug</b>   |            |
|                                  | HP 300GB U320 10K Universal HDD  | 350964-B22 |
|                                  | HP 146GB U320 10K Universal HDD  | 286716-B22 |
|                                  | HP 72GB U320 10K Universal HDD   | 286714-B22 |
|                                  | HP 300GB U320 15K Universal HDD  | 411089-B22 |
|                                  | HP 146GB U320 15K Universal HDD  | 347708-B22 |
|                                  | HP 72GB U320 15K Universal HDD   | 286778-B22 |
|                                  | HP 36GB U320 15K Universal HDD   | 286776-B22 |
|                                  | <b>NOTE:</b> Please see the Ultra320 Universal Hot Plug Hard Drive QuickSpecs for additional technical information on the hard drives Support details, please see the following:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11531_div/11531_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11531_div/11531_div.HTML</a> (Worldwide)              |            |
|                                  | <b>Serial ATA (SATA) Hot Plug</b>  |            |
|                                  | HP 750GB 1.5G SATA 7.2K 3.5" HDD   | 432341-B21 |
|                                  | HP 500GB 1.5G SATA 7.2K 3.5" HDD   | 395473-B21 |
|                                  | HP 250GB 1.5G SATA 7.2K 3.5" HDD   | 349239-B21 |
|                                  | HP 160GB 1.5G SATA 7.2K 3.5" HDD   | 349238-B21 |
|                                  | HP 80GB 1.5G SATA 7.2K 3.5" HDD  | 349237-B21 |
|                                  | <b>NOTE:</b> SATA drives have a 1-year warranty. Please see the SATA Hard Drive QuickSpecs for additional technical information on the hard drives Support details, please see the following:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.HTML</a> (Worldwide) |            |

Options

|                     |   |            |
|---------------------|---|------------|
|                     | <b>SAS 3.5" Hot Plug (For use with Serial CTO Chassis)</b>  |            |
|                     | HP 146GB 3G SAS 15K 3.5" SP HDD   | 375872-B21 |
|                     | HP 72GB 3G SAS 15K 3.5" SP HDD  | 375870-B21 |
|                     | HP 36GB 3G SAS 15K 3.5" SP HDD  | 375868-B21 |
|                     | <b>NOTE:</b> Please see the <a href="#">SAS Hard Drive QuickSpecs</a> for additional technical information on the hard drives and support details:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.HTML</a> (Worldwide)   |            |
| Hard Drive Cables   | HP Internal SAS/SATA Cable, 30 inch multi-lane  | 389662-B21 |
|                     | <b>NOTE:</b> The SAS cable above supports four hard drives. Two cables are required to support more than 4 hard drives. These cables and HP Smart Array P600 RAID controller are required to support Serial Attached SCSI (SAS) hard drives. Refer to the ML350 G4p Cable Matrix for detailed information ( <a href="http://www.hp.com/servers/proliantML350">http://www.hp.com/servers/proliantML350</a> ).  |            |
| Storage Controllers | <b>SCSI Controllers</b>   |            |
|                     | Smart Array 6402/128 Controller   | 273915-B21 |
|                     | Smart Array 6404/256 Controller   | 273914-B21 |
|                     | Smart Array 641 Controller  | 291966-B21 |
|                     | Smart Array 642 Controller  | 291967-B21 |
|                     | 128-MB BBWC (Battery-Backed Write Cache) Enabler  | 351580-B21 |
|                     | <b>NOTE:</b> This 128MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller.  |            |
|                     | Ultra320 Expansion Module for SA-6402   | 273911-B21 |
|                     | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2  | 374654-B21 |
|                     | <b>NOTE:</b> Please see the following QuickSpecs for Technical Specifications and additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.HTML</a> (Smart Array 6400 Series)<br><a href="http://h18000.www1.hp.com/products/quickspecs/12067_div/12067_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12067_div/12067_div.HTML</a> (Smart Array 641)<br><a href="http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.HTML</a> (Smart Array 642)<br><a href="http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.HTML</a> (Single Channel U320 SCSI G2 HBA) |            |
|                     | <b>Serial ATA (SATA) Controller</b>   |            |
|                     | HP 6-port SATA RAID Controller  | 372953-B21 |
|                     | <b>NOTE:</b> Please see the following Controller or SCSI Adapter QuickSpecs for Technical Specifications<br><a href="http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.HTML</a> (6-Port SATA RAID Controller)   |            |
|                     | <b>SAS Controller</b>   |            |
|                     | <b>Smart Array P600 Controller</b>  |            |
|                     | HP Smart Array P600/256 BBWC Controller   | 337972-B21 |
|                     | 512MB DDR BBWC Upgrade  | 372538-B21 |
|                     | <b>NOTE:</b> For Smart Array P600 Controller only.  |            |
|                     | <b>NOTE:</b> Please see the following QuickSpecs for Technical Specifications and additional information:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12247_div/12247_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12247_div/12247_div.HTML</a> (Smart Array P600 Controller)  |            |

Options

|  |                                      |            |
|--|--------------------------------------|------------|
| <b>SAS HBA</b>   |                                      |            |
|  | HP 8 Internal Port SAS HBA with RAID | 347786-B21 |
| <b>NOTE:</b> Please see the following QuickSpecs for additional information:<br><a href="http://h18004.www1.hp.com/products/quickspecs/12332_div/12332_div.html">http://h18004.www1.hp.com/products/quickspecs/12332_div/12332_div.html</a><br>(8 Internal Port HBA) |                                      |            |

|  |  |            |
|--|--|------------|
| <b>Communications</b>  | HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter              | 367132-B21 |
|  | HP NC310F PCI-X 1000SX Gigabit Server Adapter                        | 368169-B21 |
|  | HP NC320T PCI Express 1000T Gigabit Server Adapter                   | 367047-B21 |
|  | HP NC340T PCI-X 4-port 1000T Gigabit Server Adapter                  | 391661-B21 |
|  | HP NC360T PCI Express Dual Port Gigabit Server Adapter               | 412648-B21 |
|  | HP NC373F PCI Express Multifunction Gigabit Server Adapter           | 394793-B21 |
|  | HP NC373T PCI Express Multifunction Gigabit Server Adapter           | 394791-B21 |
|  | HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter | 394795-B21 |
|  | HP NC1020 PCI 1000T Gigabit Server Adapter                           | 353377-B21 |
|  | HP NC7771 PCI-X 1000T Gigabit Server Adapter                         | 290563-B21 |
| <b>NOTE:</b> NC61XX, NC71XX, NC77XX, or NC1020 network adapter (NIC) can be used for redundancy with the embedded NC7761 NIC. When either the embedded NC7761 or the NC1020 is teamed with other HP Ethernet adapters, Jumbo Frames and LSO features are automatically disabled. |  |            |
|  | 2006 Agere PCI high-speed international soft modem                   | EK694AA    |

|                           |   |            |
|---------------------------|---|------------|
| <b>Management Options</b> | Remote Insight Lights-Out Edition II (NA, LA) | 227251-001 |
|                           | Remote Insight Lights-Out Edition II (EMEA)   | 227251-021 |
|                           | Remote Insight Lights-Out Edition II (ROW)    | 227251-371 |

|                    |   |        |
|--------------------|---|--------|
| <b>Tape Drives</b> | <b>NOTE:</b> The following tape drives are recommended for use with the HP ProLiant ML350 G4p. Additional HP tape drives are supported.   |        |
|                    | <b>NOTE:</b> For the complete listing of Tape Drive offerings, please see:<br><a href="http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html">http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html</a>   |        |
|                    | <b>USB Tape Drives</b>  |        |
|                    | HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite)  | DW026A |
|                    | <b>Ultrium Tape Drives</b>  |        |
|                    | HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite)   | DW064A |
|                    | HP StorageWorks Ultrium 460 Internal Tape Drive (Carbon)  | Q1518B |
|                    | HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite)   | DW016A |
|                    | HP StorageWorks Ultrium 960 Internal Tape Drive (Carbonite)   | Q1538A |
|                    | <b>NOTE:</b> Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items:<br><a href="http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html">http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html</a><br>(Worldwide)<br><a href="http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html">http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html</a><br>(Worldwide)<br>For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a> . |        |
|                    | <b>Internal, Rack-Mount, and Array Module DAT Drives</b>  |        |
|                    | HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)  | Q1522B |



Options

**NOTE:** Please see the DAT Tape Drive QuickSpecs for controllers, media, and other options:

[http://h18000.www1.hp.com/products/quickspecs/11883\\_div/11883\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/11883_div/11883_div.HTML) (Worldwide)

For an up-to-date listing of the latest O/S and software support details for HP DAT drives, please visit: <http://www.hp.com/go/connect>

**Rack-Mount Tape Drive Enclosures**

HP StorageWorks 1U Rack-Mount Kit A7445B

**NOTE:** The 1U Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, Ultrium 448 and Ultrium 920 tape drives.

HP StorageWorks 1U USB Rack-Mount Kit A8007A

**NOTE:** The 1U USB Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the DAT 24 USB, DAT 40 USB and DAT 72 USB tape drives.

HP StorageWorks 3U Rack-mount kit 274338-B22

**NOTE:** The 3U Rack-mount Kit can support up to (2) full-height or (4) half-height tape drives and compatible with multiple LVD SCSI tape drives including DAT 40, DAT 72, DLT VS160, SDLT 320, SDLT 600, Ultrium 232, Ultrium 460, Ultrium 448, Ultrium 920 and Ultrium 960 tape drives.

**Tape Autoloaders**

**HP StorageWorks DAT Autoloader**

HP StorageWorks DAT 72x10 tape autoloader AE313A

**HP StorageWorks 1/8 Tape Autoloader**

HP StorageWorks 1/8 Ultrium 920 G2 Tape Autoloader AH165A

HP StorageWorks 1/8 Ultrium 448 G2 Tape Autoloader AH164A

HP StorageWorks 1/8 Ultrium 232 G2 Tape Autoloader AH163A

HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit AH166A

**NOTE:** Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions

**NOTE:** Please reference the 1/8 Tape Autoloader QuickSpecs at <http://www.hp.com/go/automation> for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>

Options

|                |  |        |
|----------------|--|--------|
| Tape Libraries | <b>HP StorageWorks MSL2024 Tape Library</b>  |        |
|                | HP StorageWorks MSL2024 1 Ultrium 960 Drive Library  | AG115A |
|                | HP StorageWorks MSL2024 1 Ultrium 960 4GB FC Drive Library   | AG326B |
|                | HP StorageWorks MSL2024 1 Ultrium 920 Drive Library  | AH169A |
|                | HP StorageWorks MSL2024 2 Ultrium 920 Drive Library  | AH170A |
|                | HP StorageWorks MSL2024 1 Ultrium 448 Drive Library  | AG116A |
|                | HP StorageWorks MSL2024 2 Ultrium 448 Drive Library  | AG117A |
|                | <b>HP StorageWorks MSL4048 Tape Library</b>  |        |
|                | HP StorageWorks MSL4048 1 Ultrium 448 Drive Library  | AG320A |
|                | HP StorageWorks MSL4048 2 Ultrium 448 Drive Library  | AG321A |
|                | HP StorageWorks MSL4048 1 Ultrium 920 Drive Library  | AH171A |
|                | HP StorageWorks MSL4048 2 Ultrium 920 Drive Library  | AH172A |
|                | HP StorageWorks MSL4048 1 Ultrium 960 Drive Library  | AG322A |
|                | HP StorageWorks MSL4048 1 Ultrium 960 4GB FC Drive Library   | AG324B |
|                | HP StorageWorks MSL4048 2 Ultrium 960 Drive Library  | AG323A |
|                | HP StorageWorks MSL4048 2 Ultrium 960 4GB FC Drive Library   | AG325B |
|                | <b>HP StorageWorks MSL6000 Tape Library</b>  |        |
|                | <b>Ultrium 960 technology</b>  |        |
|                | HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library  | AD606B |
|                | HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library  | AD608B |
|                | HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library  | AD607B |
|                | HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library  | AD609B |
|                | <b>Ultrium 460 technology</b>  |        |
|                | HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library  | AD598B |
|                | HP StorageWorks MSL6030 1 Ultrium 460 Dr FC Library  | AD600B |
|                | HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library  | AD599B |
|                | HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library  | AD601B |
|                | <b>NOTE:</b> Please reference the MSL2024, MSL4048, and MSL6000 Tape Library QuickSpecs at <a href="http://www.hp.com/go/automation">http://www.hp.com/go/automation</a> for additional information needed to create a complete solution; reference current compatibility information at <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> |        |

|                                    |   |         |
|------------------------------------|---|---------|
| HP Data Protector Express Software | HP DP Express Backup Server Upgrade for ProLiant Software   | BB117AP |
|                                    | HP DP Express Package for Microsoft Small Business Server   | BB118AA |
|                                    | <b>NOTE:</b> Please see the HP Data Protector Express QuickSpecs for additional information regarding the purchase of HP Data Protector Express software:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12337_div/12337_div.html">http://h18000.www1.hp.com/products/quickspecs/12337_div/12337_div.html</a><br>(Worldwide) |         |
|                                    | <b>NOTE:</b> To obtain a free licensed copy of HP Data Protector Express for ProLiant edition software, please visit the "Protect Your Data" link accessible from your ProLiant server's System Management Homepage (SMH) software (SmartStart 7.5 or later).   |         |



Options

|  |   |            |
|--|---|------------|
| HP StorageWorks<br>Modular Smart Array 20      | HP StorageWorks Modular Smart Array 20  | 335921-B21 |
|  | <b>NOTE:</b> Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies.  |            |
|  | HP StorageWorks Modular Smart Array 20 Starter Kit  | 366172-B21 |
|  | <b>NOTE:</b> Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. Includes Smart Array 6402/128 Controller.  |            |
|  | <b>NOTE:</b> The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 3.5" Hot Plug Hard Drives.   |            |
| HP StorageWorks<br>Modular Smart Array 30      | HP StorageWorks Modular Smart Array 30 SB   | 302969-B21 |
|  | <b>NOTE:</b> Rack-mountable 14 drive enclosure with single bus, redundant power supplies  |            |
|  | HP StorageWorks Modular Smart Array 30 DB   | 302970-B21 |
|  | <b>NOTE:</b> Rack-mountable 14 drive enclosure with dual bus, redundant power supplies  |            |
|  | <b>NOTE:</b> The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 Hot Plug Hard Drives.   |            |
| HP StorageWorks<br>Modular Smart Array 50      | HP StorageWorks Modular Smart Array 50 Enclosure  | 364430-B21 |
|  | <b>NOTE:</b> Please see the Modular Smart Array 50 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12245_div/12245_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12245_div/12245_div.HTML</a> (Worldwide)               |            |
| HP StorageWorks<br>Modular Smart Array 500     | HP StorageWorks Modular Smart Array 500 Generation 2  | 335880-B21 |
|  | <b>NOTE:</b> Please see the Modular Smart Array 500 Generation 2 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11956_div/11956_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11956_div/11956_div.HTML</a> (Worldwide) |            |
| HP StorageWorks<br>Modular Smart Array 1000    | HP StorageWorks Modular Smart Array 1000  | 201723-B22 |
|  | <b>NOTE:</b> Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at<br><a href="http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML</a> (Worldwide)  |            |
| HP StorageWorks<br>Modular Smart Array 1500 cs | Modular Smart Array 1500 Controller Shelf   | AA986A     |
|  | <b>NOTE:</b> Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at:<br><a href="http://www.hp.com/go/MSA1500cs">http://www.hp.com/go/MSA1500cs</a>   |            |

### Options

|                        |   |             |
|------------------------|---|-------------|
| <b>Cluster Options</b> | ProLiant Cluster Starter Kit  | 364023-B22  |
|                        | <b>NOTE:</b> For additional information regarding the ProLiant Cluster Starter Kit please see the following QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11935_div/11935_div.html">http://h18000.www1.hp.com/products/quickspecs/11935_div/11935_div.html</a><br>(Worldwide)                |             |
|                        | HP HA/F200 for Entry SAN Cluster  | 364026-B22  |
|                        | <b>NOTE:</b> For additional information regarding the ProLiant Cluster for Entry Level SAN please see the following QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11932_div/11932_div.html">http://h18000.www1.hp.com/products/quickspecs/11932_div/11932_div.html</a><br>(Worldwide)        |             |
|                        | ProLiant Cluster HA/F500 for the Enterprise SAN   | 364024-B21  |
|                        | <b>NOTE:</b> For additional information regarding the ProLiant Cluster HA/F500 for Enterprise SAN please see the following QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11933_div/11933_div.html">http://h18000.www1.hp.com/products/quickspecs/11933_div/11933_div.html</a><br>(Worldwide) |             |
|                        | HP Serviceguard for Linux ProLiant Cluster A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (2 node license cluster kit)   | 305199-B26  |
|                        | HP Serviceguard for Linux A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (single license version)  | 307754-B26  |
|                        | HP Serviceguard for Linux and Red Hat Global File System - 1 year subscription  | T2798AA#001 |
|                        | HP Serviceguard for Linux and Red Hat Global File System - 3 years subscription   | T2798AA#003 |
|                        | <b>NOTE:</b> For additional information regarding HP Serviceguard for Linux, please see the following QuickSpecs at:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html">http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html</a><br>(Worldwide)                      |             |

### StorageWorks Options **NOTE:** The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: <http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>

|  |        |
|--|--------|
| HP StorageWorks FC2142SR 4Gb PCI-e HBA                     | A8002A |
| HP StorageWorks FC2242SR Dual Channel 4 Gb PCI-e HBA       | A8003A |
| HP StorageWorks FC1142SR 4Gb PCI-e HBA                     | AE311A |
| HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA       | AE312A |
| HP StorageWorks FC2143 4Gb PCI-X 2.0 -to-Fibre Channel HBA | AD167A |
| HP StorageWorks FC2243 Dual Channel 4Gb PCI-X 2.0 HBA      | AD168A |
| HP StorageWorks FC1143 4Gb PCI-X 2.0 HBA                   | AB429A |
| HP StorageWorks FC1243 Dual Channel 4Gb PCI-X 2.0 HBA      | AE369A |

|  |                       |        |
|--|-----------------------|--------|
| <b>Uninterruptible Power Systems – Tower UPS</b> | HP, T1000 UPS NA      | AF403A |
|  | HP, T1000 UPS JPN     | AF404A |
|  | HP, T1000 UPS INTL    | AF405A |
|  | HP, T1500 UPS NA      | AF406A |
|  | HP, T1500 UPS JPN     | AF407A |
|  | HP, T1500 UPS INTL    | AF408A |
|  | HP, R/T 2200 UPS NA   | AF409A |
|  | HP, R/T 2200 UPS JPN  | AF410A |
|  | HP, R/T 2200 UPS INTL | AF411A |

Options

|  |   |        |
|--|---|--------|
| Uninterruptible Power Systems – Rack UPS   | HP, R1.5kVA UPS, 1U, NA   | AF419A |
|  | HP, R1.5kVA UPS, 1U, INTL   | AF418A |
|  | HP, R1.5kVA UPS, 1U, JPN/TW   | AF421A |
|  | HP R3000 VA UPS, 2U, DTC, INTL  | AF414A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part numbers 192186-B31, 192186-B32, 192186-B33, 192186-AR1. |        |
|  | HP R3000 VA UPS, 2U, L5-30, NA  | AF422A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 192186-001.                                      |        |
|  | HP R3000 VA UPS, 2U, L6-20, NA  | AF423A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 192186-002.                                      |        |
|  | HP R3000 VA UPS, 2U, L6-20, JPN   | AF424A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 192186-292.                                      |        |
|  | HP R3000 VA UPS, 2U, L5-30, JPN   | AF425A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 192186-291.                                      |        |
|  | HP R5500 VA UPS, INTL   | AF416A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 326529-B31.                                      |        |
|  | HP R5500 VA UPS, NA/JPN   | AF426A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 326529-D71.                                      |        |
|  |   |        |
|  |   |        |
| HP Monitored Power Distribution Unit (PDU) | <b>HP Monitored Power Distribution Unit: Full Rack Version</b>  |        |
|  | HP 17.3 kVA S2324 Monitored PDU- dual input, 3U, 24A (NA/JPN)   | AF503A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 370959-D71.                                      |        |
|  | HP 8.3 kVA S1324 Monitored PDU- single input, 3U, 24A (NA/JPN)  | AF504A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 370960-D71.                                      |        |
|  | HP 16.6 kVA S2140 Monitored PDU- dual input, 1U, 40A (NA/JPN)   | AF505A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 37061-D71.                                       |        |
|  | HP 8.6 S1140 Monitored PDU- single input, 1U, 40A (NA/JPN)  | AF506A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 370962-D71.                                      |        |
|  | HP 22.1 kVA S2316 Monitored PDU- dual input, 3U, 16A (INTL)   | AF507A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 370963-B31.                                      |        |
|  | HP 11 kVA S1316 Monitored PDU- single input, 3U, 16A (INTL)   | AF508A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 370964-B31.                                      |        |
|  | HP 14.7 kVA S2132 Monitored PDU- dual input, 1U, 32A (INTL)   | AF509A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 370965-B31.                                      |        |
|  | HP 7.3kVA S1132 Monitored PDU- single input, 1U, 32A (INTL)   | AF510A |
|  | <b>NOTE:</b> Replaces non-RoHs compliant part number 370966-B31.                                      |        |

Options

|  |   |            |
|--|---|------------|
| <b>Modular PDUs 1U/0U</b><br>(Up to 32 outlets)<br><b>NOTE:</b> 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks). | HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC) (NA, Japan)   | 252663-D71 |
|  | <b>NOTE:</b> This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR.   |            |
|  | HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC) (NA, Japan)  | 252663-D72 |
|  | HP Modular Power Distribution Units (mPDU), High Volt Model, 32A (200-240 VAC) (Int'l)  | 252663-B31 |
|  | HP Modular Power Distribution Units (mPDU), High Volt Model, 40A (200-240 VAC) (WW)   | 252663-B21 |
|  | <b>NOTE:</b> This mPDU (252663-B21), 40A model has a hardwired input.   |            |
|  | HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW)   | 252663-B24 |
|  | <b>NOTE:</b> This PDU has a detachable input power cord and allows for adaptability to country specific power requirements. This model may also be used with the high volt UPSs R3000 XR and R6000 For North America, need to order cable PN 340653-001.  |            |
|  | HP Modular Power Distribution Unit (mPDU), High Volt Model, 40A, Attached Cord, (NA/JPN)  | 252663-D73 |
| <b>USB Options</b>   | HP Modular Power Distribution Unit (mPDU), High Volt Model, 40A, Attached Cord, (Int'l)   | 252663-B32 |
|  | <b>NOTE:</b> Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.HTML</a> (Worldwide) |            |
|  | HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)   | DC172B     |
|  | USB 1.44-MB External Diskette Drive (Carbonite)   | DC141B     |
|  | HP USB 04 Standard Keyboard   | DT528A#xxx |
|  | USB 2.0 4-port HUB  | DG954A     |
|  | HP 1GB Drive Key II- USB 2.0 Flash Drive  | AG382AA    |
|  | HP 512MB DriveKey II- USB Flash Drive   | ED516AA    |
|  |   |            |
| <b>Other</b>   | ProLiant ML3xx Internal to External SCSI Cable Option Kit (HD68)  | 159547-B22 |
|  | ProLiant ML3xx Internal to External SCSI Cable Option Kit (VHDCI)   | 333370-B21 |
| <b>Rack Conversion Kit</b>   | ProLiant ML350 G4 Tower to Rack Conversion Kit  | 358350-B21 |
|  | Shipping Bracket for Round Hole Racks   | 371482-B21 |
|  | <b>NOTE:</b> Required when shipping the server pre-installed in round hole rack. Square hole pre-configured rack shipping hardware included with server mounting rails.   |            |

Options

|   |   |            |
|---|---|------------|
| HP Rack 5000 Series<br>(Graphite Metallic)            | HP 5642 Rack-Unassembled  | 358254-B21 |
|   | <b>NOTE:</b> Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.HTML</a> (Worldwide)<br><b>NOTE:</b> For additional information regarding Rack Cabinets, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http:// www.hp.com/go/rackandpower</a> .   |            |
| HP Rack 10000 G2 Series<br>(Carbon/Graphite Metallic) | 10642 G2 (42U) Rack Cabinet - Pallet  | AF001A     |
|   | 10642 G2 (42U) Rack Cabinet - Shock Pallet  | AF002A     |
|   | 10642 G2 (42U) Rack Cabinet - Crated  | AF003A     |
|   | 10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet  | AF004A     |
|   | 10636 G2 (36U) Rack Cabinet - Pallet  | AF011A     |
|   | 10636 G2 (36U) Rack Cabinet - Shock Pallet  | AF012A     |
|   | 10636 G2 (36U) Rack Cabinet - Crated  | AF013A     |
|   | 10636 G2 (36U) Rack Cabinet, with Extension - Shock Pallet  | AF014A     |
|   | <b>NOTE:</b> It is mandatory to use a shock pallet when shipping racks with equipment installed.  |            |
|   | <b>NOTE:</b> Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:<br><a href="http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.HTML">http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.HTML</a> (Worldwide)<br><b>NOTE:</b> For additional information regarding Rack Cabinets, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http://www.hp.com/go/rackandpower</a> .   |            |
| HP Rack 10000 Series<br>(Graphite Metallic)           | HP S10614 (14U) Rack Cabinet - Shock Pallet   | 292302-B22 |
|   | HP 10842 (42U) Rack Cabinet - Pallet  | 257415-B21 |
|   | HP 10842 (42U) Rack Cabinet - Shock Pallet  | 257415-B22 |
|   | HP 10647 (47U) Rack Cabinet - Pallet  | 245160-B21 |
|   | HP 10647 (47U) Rack Cabinet - Crated  | 245160-B23 |
|   | HP 10622 (22U) Rack Cabinet - Pallet  | 245163-B21 |
|   | HP 10622 (22U) Rack Cabinet - Shock Pallet  | 245163-B22 |
|   | HP 10622 (22U) Rack Cabinet - Crated  | 245163-B23 |
|   | <b>NOTE:</b> xxxxxx-B21 (pallet) used to ship empty racks shipped on a truck. -B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). xxxxxx-B23 (crated) used for air shipments of empty racks.  |            |
|   | <b>NOTE:</b> It is mandatory to use a shock pallet in order to ship racks with equipment installed. Not all Compaq equipment is qualified to be shipped in the Rack 10000 series.<br><b>NOTE:</b> Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:<br><a href="http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.HTML">http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.HTML</a> (Worldwide)<br><b>NOTE:</b> For additional information regarding Rack Cabinets, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http://www.hp.com/go/rackandpower</a> |            |

Options

Keyboards and Monitors

|   |            |
|---|------------|
| TFT7210R Rack Mounted 17" Monitor   | 348373-B21 |
| <b>NOTE:</b> For a complete list of Monitors please view the following URL:<br><a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a>                                  |            |
| TFT7600 Rackmount Keyboard Monitor US   | AG052A     |
| TFT7600 Rackmount Keyboard Monitor UK   | AG053A     |
| TFT7600 Rackmount Keyboard Monitor GR   | AG054A     |
| TFT7600 Rackmount Keyboard Monitor FR   | AG055A     |
| TFT7600 Rackmount Keyboard Monitor IT   | AG056A     |
| TFT7600 Rackmount Keyboard Monitor SP   | AG057A     |
| TFT7600 Rackmount Keyboard Monitor DEN  | AG058A     |
| TFT7600 Rackmount Keyboard Monitor NOR  | AG059A     |
| TFT7600 Rackmount Keyboard Monitor SE/FI  | AG060A     |
| TFT7600 Rackmount Keyboard Monitor SWI  | AG061A     |
| TFT7600 Rackmount Keyboard Monitor PORT   | AG062A     |
| TFT7600 Rackmount Keyboard Monitor BEL  | AG063A     |
| TFT7600 Rackmount Keyboard Monitor JPN2   | AG064A     |
| TFT7600 Rackmount Keyboard Monitor RUS  | AG065A     |
| TFT7600 Rackmount Keyboard Monitor INTL   | AG066A     |
| 1U Rackmount Keyboard with USB, US  | AG072A     |
| 1U Rackmount Keyboard with USB, UK  | AG073A     |
| 1U Rackmount Keyboard with USB, GR  | AG074A     |
| 1U Rackmount Keyboard with USB, FR  | AG075A     |
| 1U Rackmount Keyboard with USB, ITL   | AG076A     |
| 1U Rackmount Keyboard with USB, SP  | AG077A     |
| 1U Rackmount Keyboard with USB, DEN   | AG078A     |
| 1U Rackmount Keyboard with USB, NOR   | AG079A     |
| 1U Rackmount Keyboard with USB, SE/FI   | AG080A     |
| 1U Rackmount Keyboard with USB, SWI   | AG081A     |
| 1U Rackmount Keyboard with USB, PORT  | AG082A     |
| 1U Rackmount Keyboard with USB, BEL   | AG083A     |
| 1U Rackmount Keyboard with USB, JPN2  | AG084A     |
| 1U Rackmount Keyboard with USB, RUS   | AG085A     |
| 1U Rackmount Keyboard with USB, INTL  | AG086A     |
| <b>NOTE:</b> For additional information regarding Rack Options, please see the following URL: <a href="http://www.hp.com/go/rackandpower">http://www.hp.com/go/rackandpower</a> |            |



Options

|                       |   |            |
|-----------------------|---|------------|
| HP KVM Switch Options | 2x1x16 IP Console Switch with Virtual Media   | AF601A     |
|                       | 4x1x16 IP Console Switch with Virtual Media   | AF602A     |
|                       | 2x16 Server Console Switch with Virtual Media   | AF600A     |
|                       | PS/2 Virtual Media Interface Adapter, 1 pack  | AF604A     |
|                       | <b>NOTE:</b> Requires PS/2 and one USB port on server.  |            |
|                       | Server Console Switch (KVM), 0 x 1 x 8 port   | 336044-B21 |
|                       | Server Console Switch (KVM), 0 x 2 x 16 port  | 336045-B21 |
|                       | PS/2 Interface Adapter, 1 pack  | 262588-B21 |
|                       | PS/2 Interface Adapter, 8 pack  | 262587-B21 |
|                       | USB Interface Adapter, 1 pack   | 336047-B21 |
|                       | Serial Interface adapter - 1 Pack with power supply   | 373035-B21 |
|                       | <b>NOTE:</b> Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL:<br><a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .                                    |            |
|                       | HP 1x 4 USB/PS2 KVM Switch, TT (NA/JPN)   | 371301-D71 |
|                       | HP 1x 4 USB/PS2 KVM Switch, TT (AU/NZ)  | 371301-011 |
|                       | HP 1x 4 USB/PS2 KVM Switch, TT (UK)   | 371301-031 |
|                       | HP 1x 4 USB/PS2 KVM Switch, TT (EU)   | 371301-A21 |
|                       | HP 1x 4 USB/PS2 KVM Switch, RM (ALL)  | 371302-B21 |
|                       | HP PS2 KVM Cable with audio, 6', 2-pack   | 371730-B21 |
|                       | HP USB KVM Cable with audio, 6', 2-pack   | 371729-B21 |
|                       | <b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL:<br><a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |            |

|                                  |   |        |
|----------------------------------|---|--------|
| HP Serial Console Server Options | HP 16 Port Serial Console Server (worldwide)  | AF101A |
|                                  | HP 48 Port Serial Console Server (worldwide)  | AF102A |
|                                  | Serial Adapter, RJ45-DB9 DCE Female, 1 Pack   | AF103A |
|                                  | Serial Adapter, RJ45-DB9 DCE Female, 8 Pack   | AF104A |
|                                  | <b>NOTE:</b> Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .     |        |
|                                  | <b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL:<br><a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |        |

Options

|   |  |        |
|---|--|--------|
| Service and Support Offerings (HP Care Pack Services) | <b>Hardware Services On-site Service</b>   |        |
|   | 4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years (Electronic)   | U4512E |
|   | 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic)   | U4513E |
|   | 6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic)   | U4514E |
|   | <b>O/S and Hardware Installation</b>   |        |
|   | Hardware Installation (Electronic)   | U4522E |
|   | Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays. (Electronic) | U4523E |
|   | <b>Support Plus</b>  |        |
|   | Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays. (Electronic)                         | U4524E |
|   | <b>Support Plus 24</b>   |        |
|   | Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic  | U4525E |
|   | Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic   | U6308E |
|   | Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic   | U8330E |
|   | <b>NOTE:</b> For more information, customer/resellers can contact <a href="http://www.hp.com/services/carepack">http://www.hp.com/services/carepack</a>  |        |

Memory

HP ProLiant ML350 G4p Memory Configuration

The HP ProLiant ML350 G4p requires memory interleaving when more than one DIMM is installed. For interleaving, DIMMs must be configured in identical pairs. The system will not boot properly if multiple DIMMs of varying density or type are installed in the system.

Standard Memory

All HP ProLiant ML350 G4p models ship with Advanced ECC PC2-3200 DDR2 SDRAM (running at 400 MHz).  
Non-array models include a single 512 MB DIMM.  
Array models include two 512 GB DIMMs.  
Factory Integrated Models include the memory capacity of your choice.

Common Memory Upgrades from Base Memory

**NOTE:** Charts do not represent all possible memory configurations.

|                         | Pair 1                         |                 | Pair 2          |        | Pair 3          |       |
|-------------------------|--------------------------------|-----------------|-----------------|--------|-----------------|-------|
| Total Capacity Required | Base Memory (Non-Array Models) | DIMM Upgrade #1 | DIMM Upgrade #2 |        | DIMM Upgrade #3 |       |
| 512 MB                  | 512 MB                         | Empty           | Empty           | Empty  | Empty           | Empty |
| 1 GB                    | 512 MB                         | 512 MB          | Empty           | Empty  | Empty           | Empty |
| 2 GB                    | 512 MB                         | 512 MB          | 512 MB          | 512 MB | Empty           | Empty |
| 4 GB                    | 512 MB                         | 512 MB          | 512 MB          | 512 MB | 1 GB            | 1 GB  |

|                         | Pair 1                     |        | Pair 2          |        | Pair 3          |       |
|-------------------------|----------------------------|--------|-----------------|--------|-----------------|-------|
| Total Capacity Required | Base Memory (Array Models) |        | DIMM Upgrade #1 |        | DIMM Upgrade #2 |       |
| 1 GB                    | 512 MB                     | 512 MB | Empty           | Empty  | Empty           | Empty |
| 2 GB                    | 512 MB                     | 512 MB | 512 MB          | 512 MB | Empty           | Empty |
| 4 GB                    | 512 MB                     | 512 MB | 512 MB          | 512 MB | 1 GB            | 1 GB  |

Installing maximum memory

| Maximum Capacity | Pair 1              |                     | Pair 2              |                     | Pair 3              |                     |
|------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 12 GB            | 2 GB<br>Single Rank | 2 GB<br>Single Rank | 2 GB<br>Single Rank | 2 GB<br>Single Rank | 2 GB<br>Single Rank | 2 GB<br>Single Rank |

- Following are memory options available from HP:
- 512 MB of Advanced ECC PC2-3200 DDR2 SDRAM DIMM Memory Kit (1 x 512 MB)
  - 1 GB of Advanced ECC PC2-3200 DDR2 SDRAM DIMM Memory Kit (2 x 512 MB)
  - 2 GB of Advanced ECC PC2-3200 DDR2 SDRAM DIMM Memory Kit (2 x 1024 MB)
  - 4 GB Single-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB)
  - 4 GB Dual-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB)

384163-B21

343055-B21

343056-B21

343057-B21

375004-B21

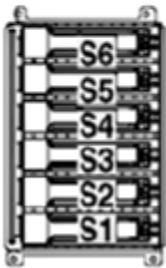
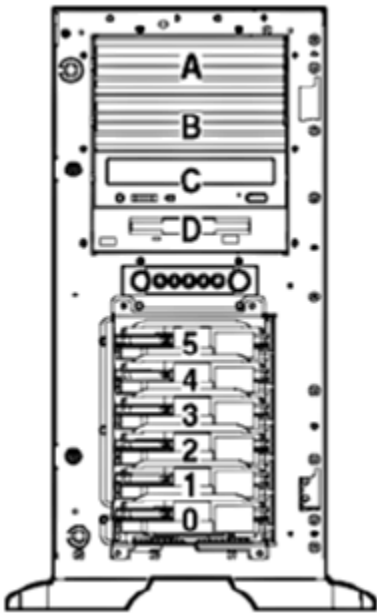
Memory

**NOTE:** Online Spare Memory is not supported when using 2-rank DIMMs. A total of 8 ranks are supported on the HP ProLiant ML350 G4p, A maximum of 4, 2-rank DIMMs can be populated. If you plan to mix DIMM types, 2-rank DIMMs must be installed in the first bank, 1 rank DIMMs can then be installed in subsequent banks.

The following is the memory population rules for the HP ProLiant ML350 G4p.  
**Key:** S denotes single rank kit, D denotes Dual rank kit, and X denotes no install.

| Bank A | Bank B | Bank C | NOTES:                     |
|--------|--------|--------|----------------------------|
| S      | X      | X      |                            |
| S      | S      | X      |                            |
| S      | S      | S      |                            |
| D      | X      | X      | Online spare not supported |
| D      | S      | X      | Online spare not supported |
| D      | S      | S      | Online spare not supported |
| D      | D      | X      | Online spare not supported |

Storage



- 0 - 5

6 Hot Plug SCSI Hard Drive Bays
- or
- S1-S6

6 Hot plug SATA Hard Drive Bays
- D

1.44 MB Diskette Drive
- C

48x CD-ROM
- A,B

Available half height bay

Drive Support

|  | Quantity Supported | Position Supported | Controller      |
|--|--------------------|--------------------|-----------------|
| Removable Media                        |                    |                    |                 |
| 1.44-MB Diskette Drive                 | Up to 1            | D                  | Integrated      |
| IDE (ATAPI) CD-ROM Drive               | Up to 2            | A, B, C            | Integrated IDE  |
| HP DVD±R/RW 16X Half Height            | Up to 2            | A, B, C            | Integrated IDE  |
| DVD-ROM Drive Option Kit               | Up to 2            | A, B, C            | Integrated IDE  |
| ML3xx Two Bay Hot Plug SCSI Drive Cage | Up to 1            | A + B*             | Integrated SCSI |

**\*NOTE:** The Two Bay Hot Plug SCSI Drive Cage requires the use of both available removable media bays (A+B). In most cases, it is not possible to install both a non hot plug tape drive and the two bay hot pug SCSI drive cage option.

Storage

Hard Drives

Ultra320 SCSI - Hot Plug Drives

|                | Quantity Supported | Position Supported | Controller                                    |
|----------------|--------------------|--------------------|---|
| 300GB U320 10K | Up to 8            | 0-5, A+B           | Integrated Dual Channel Ultra320 SCSI Adapter |
| 146GB U320 10K |                    |                    | Smart Array 641 Controller                    |
| 72GB U320 10K  |                    |                    | Smart Array 6402/128 Controller               |
| 300GB U320 15K |                    |                    | Smart Array 6404/256 Controller               |
| 146GB U320 15K |                    |                    | Smart Array 642 Controller                    |
| 72GB U320 15K  |                    |                    |   |
| 36GB U320 15K  |                    |                    |   |

**NOTE:** Use of hot plug SCSI hard drives in positions A and B requires an optional two-bay drive cage (PN 244059-B21). With Serial models, a SCSI HBA is also required.

SATA - Hot Plug

|                      | Quantity Supported | Position Supported | Controller                           |
|----------------------|--------------------|--------------------|--------------------------------------|
| 80GB 1.5G SATA 7.2K  | Up to 6            | S1-S6              | HP integrated 2 Port SATA controller |
| 160GB 1.5G SATA 7.2K |                    |                    | HP 6-Port SATA RAID Controller       |
| 250GB 1.5G SATA 7.2K |                    |                    |                                      |
| 500GB 1.5G SATA 7.2K |                    |                    |                                      |
| 750GB 1.5G SATA 7.2K |                    |                    |                                      |

**NOTE:** Full hot plug capability and drive LED status support requires installation of a SATA RAID controller. The With the HP 6-Port SATA RAID Controller, hard drive configurations can be setup, monitored and managed using HP Storage Manager. HP Systems Insight Manager should not be used to view the status of SATA hard drives and SATA RAID configurations. After installing the 6-Port SATA RAID Controller, ensure that the latest firmware, drivers, and management software are downloaded from <http://www.hp.com/go/support>.

SAS- Hot Plug (3.5")

|                     | Quantity Supported | Position Supported | Controller                     |
|---------------------|--------------------|--------------------|--------------------------------|
| 36GB 3G SAS 15K SP  | 6                  | S1-S6              | HP Smart Array P600 Controller |
| 72GB 3G SAS 15K SP  |                    |                    |                                |
| 146GB 3G SAS 15K SP |                    |                    |                                |

Storage

External Storage

|   | Quantity Supported  | Position Supported | Host Controller or Adapter  |
|---|---|--------------------|---|
| Modular Smart Array 20 Family   | Up to 2   | External           | Smart Array 6402/128 Controller<br>Smart Array 6404/256 Controller  |
| Modular Smart Array 30 Family   | Up to 2   | External           | Integrated Dual Channel Ultra320 SCSI Adapter<br><b>NOTE:</b> Connection of an external device to the embedded SCSI controller requires an internal-to-external cable (PN 159547-B22 or 333370-B21)<br>Smart Array 6402/128 Controller<br>Smart Array 6404/256 Controller<br>Smart Array 642 Controller |
| Modular Smart Array 50 Enclosure  | Up to 2   | External           | HP Smart Array P600/256 BBWC Controller   |
| Modular Smart Array 500 G2  |   | External           | Please see the Modular Smart Array 500 G2 QuickSpecs for the latest list of supported HBAs: <a href="http://www.hp.com/go/msa500">http://www.hp.com/go/msa500</a> .   |
| Modular Smart Array 1500 cs or 1000   | Please see the Modular Smart Array 1500 cs or Modular Smart Array 1000 QuickSpecs links below to determine configuration requirements |                    | Please see the Modular Smart Array 1500 cs or Modular Smart Array 1000 QuickSpecs (URL below) for the latest list of supported HBAs.  |
| Modular Smart Array 1000: <a href="http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML">http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML</a> (Worldwide) |   |                    |   |
| Modular Smart Array 1500 cs: <a href="http://www.hp.com/go/MSA1500cs">http://www.hp.com/go/MSA1500cs</a>  |   |                    |   |

Tape Drives, Tape Autoloaders, & Tape Libraries

**NOTE:** For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following:  
<http://h18000.www1.hp.com/products/quickspecs/Division/10233.html> (Worldwide)

**NOTE:** For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following:  
<http://h18000.www1.hp.com/products/quickspecs/Division/10809.html> (Worldwide)

**NOTE:** For complete listing of tape drive offerings see  
<http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>  
For recommended tape drive offerings for this ProLiant server see the following:

|                                       | Position Supported | Controller   | Controller Part Numbers |
|---------------------------------------|--------------------|--------------|-------------------------|
| HP StorageWorks Tape Drives, Internal | A or B             | USB 2.0 Port | N/A                     |
| DAT 24 USB                            |                    |              |                         |
| DAT 40 USB                            |                    |              |                         |
| DAT 72 USB                            |                    |              |                         |
| HP StorageWorks Tape Drives, External | External           | USB 2.0 Port | N/A                     |
| DAT 24 USB                            |                    |              |                         |
| DAT 40 USB                            |                    |              |                         |
| DAT 72 USB                            |                    |              |                         |



Storage

|  |          |  |            |
|--|----------|--|------------|
| <b>HP StorageWorks Tape Drives, Internal</b><br>Ultrium 232<br>Ultrium 448<br>Ultrium 920<br>DAT 40<br>DAT 72<br>DLT VS160   | A or B   | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2   | 374654-B21 |
| <b>HP StorageWorks Tape Drives, Internal</b><br>Ultrium 460<br>Ultrium 960<br>SDLT 600   | A and B  | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2   | 374654-B21 |
| <b>HP StorageWorks Tape Drives, External</b><br>Ultrium 232<br>Ultrium 448<br>Ultrium 460<br>Ultrium 920<br>Ultrium 960<br>DAT 40<br>DAT 72<br>DLT VS160<br>SDLT 600   | External | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2   | 374654-B21 |
| <b>HP StorageWorks Autoloaders, External</b><br>DAT 72x10 Autoloader<br>1/8 G2 Tape Autoloader   | External | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2   | 374654-B21 |
| <b>HP StorageWorks SCSI Rack-Mount Tape Drive Enclosures</b><br>1U Rack-Mount Kit<br>3U Rack-Mount Kit   | External | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2   | 374654-B21 |
| <b>HP StorageWorks USB Rack-Mount Tape Drive Enclosures</b><br>1U Rack-Mount Kit   | External | USB 2.0 Port   | N/A        |
| <b>HP StorageWorks Tape Libraries, External</b><br>MSL2024 (Ultrium 448, Ultrium 920 and 960-based)<br>MSL4048 (Ultrium 448, Ultrium 920 and 960-based)<br>MSL6000 (Ultrium 960 and 460-based)<br>MSL6000 (SDLT 600-based) | External | Please consult the EBS connectivity matrix at <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> for detailed connectivity information. | N/A        |



Power Specifications

|  |                   |
|--|-------------------|
| Part Number                            | 382175-001        |
| Spare Kit                              | 390394-001        |
| Operational Input Voltage Range (Vrms) | 90 - 264          |
| Frequency Range (Nominal) (Hz)         | 47 - 63 (50 / 60) |

| Nominal Input Voltage (Vrms)                   | 100  | 115  | 208  | 220  | 230  | 240  |
|--|------|------|------|------|------|------|
| Max Rated Output Wattage Rating                | 725  | 725  | 725  | 725  | 725  | 725  |
| Nominal Input Current (A rms)                  | 9.2  | 7.9  | 4.2  | 4.0  | 3.8  | 3.6  |
| Max Rated Input Wattage Rating (Watts)         | 906  | 895  | 873  | 863  | 863  | 863  |
| Max. Rated VA (Volt-Amp)                       | 915  | 904  | 910  | 899  | 909  | 909  |
| Efficiency (%)                                 | 80   | 81   | 83   | 84   | 84   | 84   |
| Power Factor                                   | 0.99 | 0.99 | 0.96 | 0.96 | 0.95 | 0.95 |
| Leakage Current (mA)                           | 0.31 | 0.36 | 0.65 | 0.69 | 0.72 | 0.75 |
| Maximum Inrush Current (A peak)                | 15   | 17   | 30   | 32   | 34   | 35   |
| Maximum Inrush Current duration (milliseconds) | 3    |      |      |      |      |      |

**NOTES:**  
ActiveAnswers Power Calculation  
Power calculator is LIVE on ActiveAnswers Web site. This is an external link.  
Follow this link: <http://h30099.www3.hp.com/configurator/powercalcs.asp>

- To drill down to calculators:
- Click on: "ProLiant Servers"
  - Click on the Server of interest. Example: ML350 G4p
  - Click on: "Power Calculator" link. (You may need to scroll down to see it)

Technical Specifications

|  |  |   |  |  |
|--|--|---|--|--|
| System Unit - Tower                          | <b>Dimensions</b> (HxWxD)<br>(with feet/bezel)         | 18.43 x 8.66 x 25.2 in (46.8 x 22 x 64 cm)  |  |  |
|  | <b>Weight</b> (approximate)                            | 60 lb (27.24 kg) (without hard drives)  |  |  |
|  | <b>Input Requirements</b><br>(per power supply)        | Rated Line Voltage  | 100 to 120 VAC   |  |
|  |  | Rated Input Frequency   | 50 Hz to 60 Hz   |  |
|  |  | Input Power   | 906W @ 100VAC  |  |
|  |  | Rated Input Current   | 9.2A(100VAC),4.3A(200VAC)                                      |  |
|  | <b>Rated Line Frequency</b>                            | 50 to 60 Hz   |  |  |
|  | <b>BTU Rating</b>                                      | 3,125 BTU/hr  |  |  |
|  | <b>SCSI Connectors</b>                                 | Two internal HD68 connectors  |  |  |
|  |  | (Support for either two internal, two external, or a mix of internal/external is available. This is achieved using an internal to external SCSI cable option kit (PN 159547-B22) and either of the two SCSI knockouts.) |  |  |
|  | <b>Power Supply Output Power</b><br>(per power supply) | Rated Steady-State Power  | 725W   |  |
|  |  |   |  |  |
|  | <b>Temperature Range</b>                               | Operating   | 50° to 95° F (10° to 35° C)<br>(No direct sustaining sunlight) |  |
|  |  | Storage (up to one year)  | -40° to 158° F (-40° to 70° C)                                 |  |
| <b>Maximum Wet Bulb Temperature</b>          | 82.4° F (28° C)  |   |  |  |
| <b>Relative Humidity</b><br>(non-condensing) | Operating  | 10% to 90%  |  |  |
|  | Non-operating  | 5% to 90%   |  |  |
| <b>Acoustic Noise</b>                        | Idle<br>(Fixed Disk Drives Spinning)                   |   |  |  |
|  |  | L WAd (BELS)  | 6.0  |  |
|  |  | L pAm (dBA)   | 43   |  |
|  | Operating<br>(Random Seeks to Fixed Disks)             |   |  |  |
|  |  | L WAd (BELS)  | 6.0  |  |
|  |  | L pAm (dBA)   | 43   |  |

Technical Specifications

|                    |   |  |  |
|--------------------|---|--|--|
| System Unit - Rack | Dimensions (HxWxD)                              | 8.61 x 19 x 24 in (21.87 x 48.26 x 60.96 cm)   |  |
|                    | Weight(approximate)                             | 60 lb (27.24 kg) (without hard drives)   |  |
|                    | Input Requirements<br>(per power supply)        | Rated Line Voltage   | 100 to 120 VAC   |
|                    |   | Rated Input Frequency  | 50 Hz to 60 Hz   |
|                    |   | Input Power  | 906W @ 100VAC  |
|                    |   | Rated Input Current  | 9.2A(100VAC), 4.3A(200VAC)                                     |
|                    | Rated Line Frequency                            | 50 to 60 Hz  |  |
|                    | BTU Rating                                      | 3,125 BTU/hr   |  |
|                    | SCSI Connectors                                 | Two internal HD68 connectors   |  |
|                    |   | <b>NOTE:</b> Support for either two internal, two external, or a mix of internal/external is available. This is achieved using an internal to external SCSI cable option kit, PN 159547-B22 or 333370-B21, and either of the two SCSI knockouts. |  |
|                    | Power Supply Output Power<br>(per power supply) | Rated Steady-State Power   | 725W   |
|                    |   |  |  |
|                    | Temperature Range                               | Operating  | 50° to 95° F (10° to 35° C)<br>(No direct sustaining sunlight) |
|                    |   | Storage (up to one year)   | -40° to 158° F (-40° to 70° C)                                 |
|                    |   | Maximum Wet Bulb Temperature   | 82.4° F (28° C)  |
|                    | Relative Humidity<br>(non-condensing)           | Operating  | 10% to 90%   |
|                    |   | Non-operating  | 5% to 90%  |
|                    | Acoustic Noise                                  | Idle<br>(Fixed Disk Drives Spinning)   |  |
|                    |   | L WAd (BELS)   | 6.0  |
|                    |   | L pAm (dBA)  | 43   |
|                    |   | Operating<br>(Random Seeks to Fixed Disks)   |  |
|                    |   | L WAd (BELS)   | 6.0  |
|                    |   | L pAm (dBA)  | 43   |

Technical Specifications

|   |                                    |                                    |  |
|---|------------------------------------|------------------------------------|--|
| Embedded NC7761<br>Gigabit Server Adapter | Network Interface<br>Compatibility | 10Base-T/100Base-TX/1000Base-TX    |  |
|   |                                    | IEEE 802.3 10Base-T                |  |
|   |                                    | IEEE 802.3ab 1000Base-T            |  |
|   |                                    | IEEE 802.3u 100Base-TX             |  |
|   | Data Transfer Method               | 32-bit bus-master PCI              |  |
|   | Network Transfer Rate              | 10Base-T (Half-Duplex)             | 10 Mb/s  |
|   |                                    | 10Base-T (Full-Duplex)             | 20 Mb/s  |
|   |                                    | 100Base-TX (Half-Duplex)           | 100 Mb/s                                       |
|   |                                    | 100Base-TX (Full-Duplex)           | 200 Mb/s                                       |
|   |                                    | 1000Base-TX (Half and Full-Duplex) | 2000Mb/s                                       |
|   | Connector                          | RJ-45                              |  |
|   | Cable Support                      | 10Base-T                           | Categories 3, 4 or 5 UTP; up to 328 ft (100 m) |
|   |                                    | 10/100/1000Base-TX                 | Category 5 UTP; up to 328 ft (100 m)           |

|   |   |  |
|---|---|--|
| Integrated Serial ATA<br>Controller   | Simultaneous drive transfer channels            | Support for up to 2 hard drives  |
|   | Transfer rate synchronous (maximum theoretical) | 150 MB/s per channel; 300MB/s  |
|   | Protocol  | Serial ATA   |
|   | Drive support                                   | HP Universal Serial ATA  |
|   | Feature   | Supports Pre-Failure Warranty of SATA Hard Drives<br>Support for Systems Insight Manager |
|   | OS Support                                      | Microsoft Windows 2000 Server  |
|   |   | Microsoft Windows Server 2003  |
|   |   | Novell NetWare   |
| Linux (Red Hat, SuSE, UnitedLinux)  |   |  |
| <b>NOTE:</b> This controller does not support LED functions. This controller does not support Hot Plug functions. |   |  |

Technical Specifications

|   |   |   |
|---|---|---|
| Integrated Dual Channel Ultra320 SCSI Adapter   | Drives Supported                          | Up to 28 SCSI devices (14 per channel)  |
|   | Data Transfer Method                      | 64-bit PCI bus-master   |
|   | SCSI Channel Transfer Rate                | 320 MB/s per channel  |
|   | Maximum Transfer Rate per PCI Bus (peak)  | 400 MB/s per channel  |
|   | SCSI Protocols                            | Wide Ultra2 SCSI  |
|   |   | Wide-Ultra SCSI-3   |
|   |   | Ultra320 SCSI   |
|   | Electrical Protocol                       | Low Voltage Differential (LVD)  |
|   | SCSI Termination                          | Active Termination  |
|   | External SCSI Connectors                  | Optional VHDCI and HD68 internal-to-external connectors                       |
| <b>Smart Array 641 Controller</b><br><b>NOTE:</b> The Smart Array 641 Controller ships standard with the Array Models only. | Internal SCSI Connectors                  | Two 68-Pin Wide-Ultra SCSI-3 connectors                                       |
|   | Protocol                                  | Ultra320 SCSI   |
|   | SCSI Electrical Interface                 | Low Voltage Differential (LVD)  |
|   | Drives Supported                          | Up to 6 Ultra320, Ultra3 and Ultra2 SCSI hard drives                          |
|   | SCSI Port Connectors SA-641               | One internal SCSI port  |
|   | Data Transfer Method                      | 64-Bit PCI bus-master   |
|   | PCI Bus Speed                             | 64-bit, 133-MHz PCI-X (1 GB/s maximum bandwidth)                              |
|   | PCI                                       | 3.3 volt PCI slot compatibility only  |
|   | Simultaneous Drive Transfer Channels      | One   |
|   | Channel Transfer Rate                     | 320-MB/s total; 320-MB/s per channel  |
|   | Software upgradeable Firmware             | Yes   |
|   | Cache Memory                              | 64-MB DRAM used for code, transfer buffers, and non-battery backed read cache |
|   | Logical Drives Supported                  | 32  |
|   | Maximum Capacity                          | 1.80 TB (6 X 300 GB)  |
|   | Memory Addressing                         | 64-bit, supporting servers memory greater than 4 GB                           |
|   | RAID Support                              | RAID 5 (Distributed Data Guarding)  |
|   |   | RAID 1+0 (Striping & Mirroring)   |
|   |   | RAID 1 (Mirroring)  |
|   |   | RAID 0 (Striping)   |
|   | Upgradeable Firmware                      | 2-MB Flashable ROM  |
|   | Disk Drive and Enclosure Protocol Support | Ultra320, Ultra2 and Ultra3   |

### *Technical Specifications*

© Copyright 2006 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation. Intel is a US registered trademark of Intel Corporation.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.